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THE UNITED STATES SHIPBUILDING INDUSTRY
AND INFLUENCES OF CONGLOMERATES

by

GARY LEE KAVANAGH

Technical Report No. 1

SLOAN SCHOOL OF MANAGEMENT

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**MASSACHUSETTS INSTITUTE
OF
TECHNOLOGY**

June 1977

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GARY LEE KAVANAGH

Technical Report No. 1

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Alfred P. Sloan School of Management
Massachusetts Institute of Technology
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June 1977

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FOREWORD

The Alfred P. Sloan School of Management at the Massachusetts Institute of Technology uniquely combines management programs for undergraduate, graduate, and executive development education and research. The work of the School is supported, in part, by government contracts and industrial grants-in-aid. The work reported herein was supported (in part) by the Office of Naval Research under Contract N00014-76-C-1033.

William F. Pounds
Dean

ABSTRACT

Throughout the history of this nation, the United States shipbuilding industry has played an important role, evolving through the ebb and flow of economic circumstance, world war, and governmental activity. During the past fifteen years, the shipbuilding industry has experience many changes, one of the most visible of which has been the wave of conglomerate acquisitions of many shipyards and their rise to dominance in the industry. The influence that this has had on the industry is a controversial issue; however, it is the purpose of this study to examine the shipbuilding industry and some of the issues of conglomerate influence. First, an analysis of the U.S. shipbuilding industry is presented. The industry's history is reviewed in perspective; the major governmental participants, policies, and programs are identified and discussed; and the character of the industry is analyzed relative to world shipbuilding and relative to its distribution by major shipbuilders, market sector, and types of vessel produced. Next is a discussion of the development of conglomerates in the national economy and, more specifically, within the U.S. shipbuilding industry. Six major areas of conglomerate influence on the shipbuilding industry are investigated: facility expansion and modernization programs, organizational structure, management philosophy and expertise, Navy shipbuilding claims, power and influence, and financial reporting. An extensive examination of the Navy shipbuilding claims issue is presented because of the impact it has had upon the major U.S. shipbuilding industry market sector.

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CHAPTER 1

INTRODUCTION

The United States shipbuilding industry has played a long and important role in the development of America, evolving from pre-revolutionary times, through the ebb and flow of shipbuilding activity, world wars and government legislation, to its present state. With it has also developed the structure of American industry. A recent movement in this development has been heightened activity in large corporate mergers and acquisitions, including a significant upsurge in conglomeration. Largely due to this, the U.S. shipbuilding industry has experienced many changes during the past fifteen years. One of the most visible changes has been with the industry corporate structure. Many of the previously independent shipyards have merged with large corporations, most notably the conglomerate acquisition of a number of companies formerly totally devoted to shipbuilding. The influence that this has had on the industry is a highly controversial issue.

The objective of this study is to identify and discuss the significance of the major influences of conglomerates on the U.S. shipbuilding industry. However, at the outset, certain limitations are set upon the scope

to which the study will extend. First, the study is limited to major shipyards capable of building Naval vessels, such as destroyers, submarines and larger ships, and oceangoing merchant vessels of 475 foot length and larger. This definition is not peculiar to this study, but is consistent with that for almost all of the literature data reported. Secondly, the study is based upon data and resource material which is generally available in the literature rather than field trips, or confidential or proprietary information from either the government or private industry. This includes, primarily, government reports, Congressional hearing records, shipbuilding industry and business periodicals, and corporate annual reports. Although the most recent available data is used, 1 January 1976 will serve as the datum for general purposes. Thirdly, although the Standard Industrial Code (SIC) for the shipbuilding industry includes ship construction, repair and conversion, the thrust of this study is ship new construction. Ship repair and conversion activities comprise an important part of the overall industry; however, numerous small firms are engaged solely in these activities and would serve to complicate the data without significant benefit. Unless otherwise noted, data refer to ship construction only, rather than including repair or conversion.

The approach of the study is to first analyze the shipbuilding industry, reviewing in perspective its history, identifying the major participants in the industry and examining its basic character. This is followed by a review of the nature of merger and acquisition movements with emphasis upon conglomeration, identification and discussion of the corporate and conglomerate participants in the industry, and lastly, identification and analysis of major influences of the conglomerates on the shipbuilding industry.

CHAPTER 2

THE UNITED STATES SHIPBUILDING INDUSTRY:
HISTORICAL PERSPECTIVE

Since the very founding of the United States of America, the shipping and shipbuilding industries have played important roles in the development of the American economy and way of life. The wealth of post-revolutionary America lay in its shipping and commerce. Americans were a seafaring people whose courage and enterprise were reinforced by economic advantages provided by a sympathetic national administration. Governmental interest in the maritime industries began with the second and third acts of the First Congress which established lower duties on certain imports when carried in ships of United States citizens and imposed higher tonnage duties on foreign vessels entering U.S. ports. In 1789, Congress provided the first major stimulus to the infant shipbuilding industry. The act provided for registry of a United States flag fleet, additional preferential taxes and duties, and, most importantly, required that the U.S. flag vessels be constructed in U.S. shipyards. Aided by such economic policies, the shipbuilding industry continued to prosper and grow so that in 1855 the American shipyards delivered

over 2000 new ships, putting the privately-owned U.S. flag fleet in a position to seriously challenge the United Kingdom's traditional supremacy of the sea [33, p. 327].* This period was one of the greatest in the history of the U.S. shipbuilding industry.

The Civil War marked an end to the early growth of the maritime industries. The U.S. flag fleet dwindled steadily as owners transferred their ships to foreign registry in order to avoid the Confederate raiders and exorbitant costs for insurance. Also many were lost in battle. By the end of the war, the U.S. flag fleet, which had been second only to the United Kingdom, had lost 40% of its tonnage [33, p. 33].

In the years that followed, national economic development was directed westward to the American frontier. The American marine technology had lagged greatly behind the Europeans who, as a consequence, enjoyed a sizeable cost advantage over U.S. shipyards in producing newly-developed steel-hull, steam-powered, propellor-driven ships. The much higher shipbuilding costs and the concentration of capital investment into railroads and westward expansion left the U.S. maritime industries as extremely poor investment opportunities. In an attempt to alleviate this adverse situation, the government began a program of

*Numbers in brackets indicate bibliography reference.

subsidy through award of contracts for mail carrying to owners whose ships could be converted to warships. This program ended with the 1872 Pacific Mail Line scandal, which only worsened the plight of the maritime industries. The deterioration in both the shipping and shipbuilding industries became manifest as the U.S. flag fleet, which had carried in excess of two-thirds of the United States waterborne foreign trade in 1860, fell to less than 10% in 1900 [53, p. 18].

In the last years of the nineteenth century arose a revitalization of interest in the shipbuilding industry. This was brought about primarily due to four factors. First, America had entered the period of its "Manifest Destiny" in which new markets for industrial expansion were sought in the unexploited regions of Central and South America and the Far East. Such expansion would surely open numerous new trade routes for the world merchant fleet and require many new ships. Second, the Spanish-American War in 1898 demonstrated the severe shortage of U.S. supply and cargo vessels as the Navy was forced to buy and lease numerous foreign flag vessels. Third, a critical and costly shortage of world shipping capacity resulted from the withdrawal of many British merchant ships from foreign trade for use in the Boer War (1899-1902). Lastly, even though congressional attention was almost entirely directed towards anti-trust action, in the first years of the

twentieth century, impetus for additional U.S. shipbuilding resulted from congressional outrage at the severe dependence of President Roosevelt's Great White Fleet on foreign vessels in its 1908 world cruise attended by a motley array of vessels bearing flags of the world [27, 30, 33, 58].

Political maneuvering and congressional study continued until the outbreak of world war in 1916. Only minor success was achieved in increasing the size of the U.S. merchant fleet through legislation which provided for war risk insurance, liberalizing of restrictions on registry of foreign vessels and reduced customs duties on shipbuilding materials, among others. In 1916, however, congressional action changed forever the nature of the U.S. maritime industries by bringing in a much more active participation of government. With the outbreak of World War I, the United States was faced with the problem of supplying tonnage to replace that withdrawn by the belligerent nations. Since the principal belligerents were also the leading maritime countries of the world and since American vessels carried less than 10% of our waterborne commerce, the situation was quite serious. The Shipping Act of 1916 was enacted to "establish a United States Shipping Board for the purpose of encouraging, developing, and creating a naval auxiliary and naval reserve and a merchant marine to meet the requirements of the commerce of the United States with its territories and possessions

and with foreign countries; to regulate carriers by water engaged in the foreign and interstate commerce of the United States; and for other purposes" [58, p. 215]. It was intended to equip a neutral United States to carry on peacetime commerce in a war-torn world.

The Shipping Act of 1916 granted to the Shipping Board broad powers in acquiring additional U.S. flag vessels through purchase, lease, or construction. This included the power to form corporations to operate vessels if private operators could not be induced to take over operations. The board was granted broad regulatory powers concerning agreements between maritime business practices and sale or disposal of vessels to U.S. citizens. Additionally, basic provisions were included for wartime maritime procedures.

The United States declared war only a few months after the Shipping Board was actually organized; so their peacetime intentions could not be realized. Instead, the Shipping Board began a massive shipbuilding program to provide wartime needs. This program was given further impetus by the 1918 amendments to the Shipping Act of 1916 which prohibited the transfer to foreign registry of U.S. vessels or the sale or lease of ships, shipyard or drydock to foreigners in time of national emergency [40 Stat. Law 900]. The U.S. shipbuilding industry responded with its greatest effort to that time, yielding 2312 new ships

(13.6 million DWT), quintupling the U.S. prewar tonnage and raising the U.S. share of world fleet tonnage from less than 7% in 1914 to over 22% in 1920 [53, p. 19, 33, p. 40, 58, p. 54].

The U.S. shipbuilding industry had produced the world's largest merchant marine; however, most of this fleet was owned by the government, which had little or no experience in operating commercial shipping. The act establishing the Shipping Board limited its ownership of ships to a period of the war plus five years, and provided neither guidance for the transfer to private ownership nor a policy for the peacetime role of the U.S. flag merchant marine. These deficiencies were the aim of the Merchant Marine Act of 1920--"an Act to provide for the promotion and maintenance of the American Merchant Marine, to repeal certain emergency legislation, and provide for the disposition, regulation, and use of property acquired thereunder" [41 Stat. Law 88]. It begins with the first statement of national maritime policy, one which essentially remains today.

That it is necessary for the national defense and for the proper growth of its foreign and domestic commerce that the United States shall have a merchant marine of the best equipped most suitable types of vessels sufficient to carry the greater portion of its commerce and serve as a naval or military auxiliary in times of war or national emergency, ultimately to be owned and operated privately by citizens of the United States; and it is hereby declared to be the policy of the United

States to do whatever may be necessary to develop and encourage the maintenance of such a merchant marine . . .

The Merchant Marine Act of 1920 was intended to foster development of the maritime industries without direct government aid, even though providing indirect aids through restoration and expansion of the cabotage laws.

Shortly after passage of this act, the shipping boom collapsed and with it the government program to transfer the U.S. flag fleet to private ownership. Sale prices of Shipping Board vessels plunged as shipping managers, who were generally under-capitalized, were reluctant to buy in the face of the economic situation. Some efforts were made to spur the shipbuilding industry and provide a source of capital for shippers through legislation in 1924 [43 Stat. Law 467] and 1927 [44 Stat. Law 1451] providing for a construction loan fund. These measures were of only minor impact.

As concern mounted at the possibility that the U.S. flag fleet might be forced out of foreign trade, serious congressional debate culminated in the Merchant Marine Act of 1928--"an Act to further develop an American merchant marine, to assure its permanence in the transportation of the foreign trade of the United States . . ." [45 Stat. Law 689]. Reaffirming the national maritime policy of the 1920 Act, it provided for restrictions on the sale of Shipping Board vessels, encouragement of improvement and

replacement of existing vessels, a broad and improved construction loan fund, contract mail service for private shippers, improved insurance programs, and required travel of government officials on U.S. vessels. The primary effects of the act were to permit continued government ownership and operation of vessels and to provide a hidden subsidy through the mail service contracts.

Despite the legislation, the U.S. flag fleet share of the United States foreign trade continued to decline. From the low of less than 10% (by value) in 1914 to the high in excess of 51% in 1922, the share had fallen to less than 33% in 1933 [53, p. 18]. The United States possessed an up-to-date merchant fleet in the early 1920s, but few vessels were added thereafter. By the mid-1930s most of the fleet was nearing the end of its useful life and could no longer compete with the newer and faster foreign fleets. Additionally, hearings and investigations into the performance of the 1928 Act led to the conclusion that many of its provisions, especially the mail-contracting provisions, were ineffective, unworkable, or scandal-ridden. The congressional dissatisfaction with the 1928 Act and a presidential call for an end to disguised subsidies and a recommitment to a national merchant marine brought about landmark legislation in the Merchant Marine Act of 1936 [27, 30, 58].

This act provided the first systematic peacetime formulation of the government's maritime program. Although

echoing the policy of the 1920 act, its methods were very different. It was recognized that national interests demanded an outright subsidy to the shipping and shipbuilding industries. The primary features of the Merchant Marine Act of 1936 are: (1) establishment of a U.S. Maritime Commission to consolidate administration of this act and all other maritime acts in force and absorb the duties of the Shipping Board and its Merchant Fleet Corporation; (2) to adopt minimum manning and wage scales and reasonable working conditions upon subsidized vessels; (3) to repeal the ocean mail contract provisions of the Merchant Marine Act of 1928; (4) to establish a construction-differential subsidy program; (5) to establish an operating-differential subsidy program; (6) to authorize the government to build and charter vessels to commercial lines; and (7) to establish a 500-ship, 10-year building program [58]. The shipbuilding program proved to be invaluable as it provided the impetus for the great expansion of the shipbuilding industry necessary to satisfy the needs of World War II.

The effects of World War II wrought devastation upon all of the merchant fleets of the world; but, owing to the incredible performance of the U.S. shipbuilding industry in producing over 5000 ships (nearly 55 million DWT), the U.S. succeeded in quadrupling the size of the U.S. merchant fleet (see Table 1). While in 1939 the U.S. fleet was the world's second largest with slightly less than 14% of the

Table 1-- Number and Tonnage of Merchant Vessels Over
2000 Gross Tons Built in U.S. Shipyards Since
1914

Year	Number	Gross Tons	Deadweight Tons
1914	26	135,164	198,300
1915	24	128,337	173,850
1916	74	369,955	544,056
1917	125	642,120	951,167
1918	414	1,769,629	2,646,250
1919	723	3,369,884	5,085,684
1920	467	2,395,545	3,584,780
1921	183	1,359,426	1,886,851
1922	19	168,024	260,717
1923	18	117,042	159,940
1924	12	84,302	78,752
1925	12	83,916	103,670
1926	8	54,043	56,767
1927	19	154,700	181,511
1928	7	71,916	81,486
1929	8	65,313	84,180
1930	18	163,500	224,488
1931	14	150,949	154,941
1932	15	145,470	104,372
1933	4	49,527	32,367
1934	2	9,544	15,180
1935	2	19,022	29,760
1936	8	63,428	104,860
1937	15	121,852	191,929
1938	24	181,366	284,082
1939	28	241,052	342,032
1940	53	444,727	634,234
1941	95	749,108	1,088,497
1942	724	5,392,848	7,906,360
1943	1,661	12,485,629	18,521,534
1944	1,463	11,403,163	16,143,065
1945	1,041	7,614,898	10,304,644
1946	83	645,706	934,150
1947	39	247,327	328,048
1948	24	158,915	257,069
1949	33	540,559	863,292

Table 1 -- continued

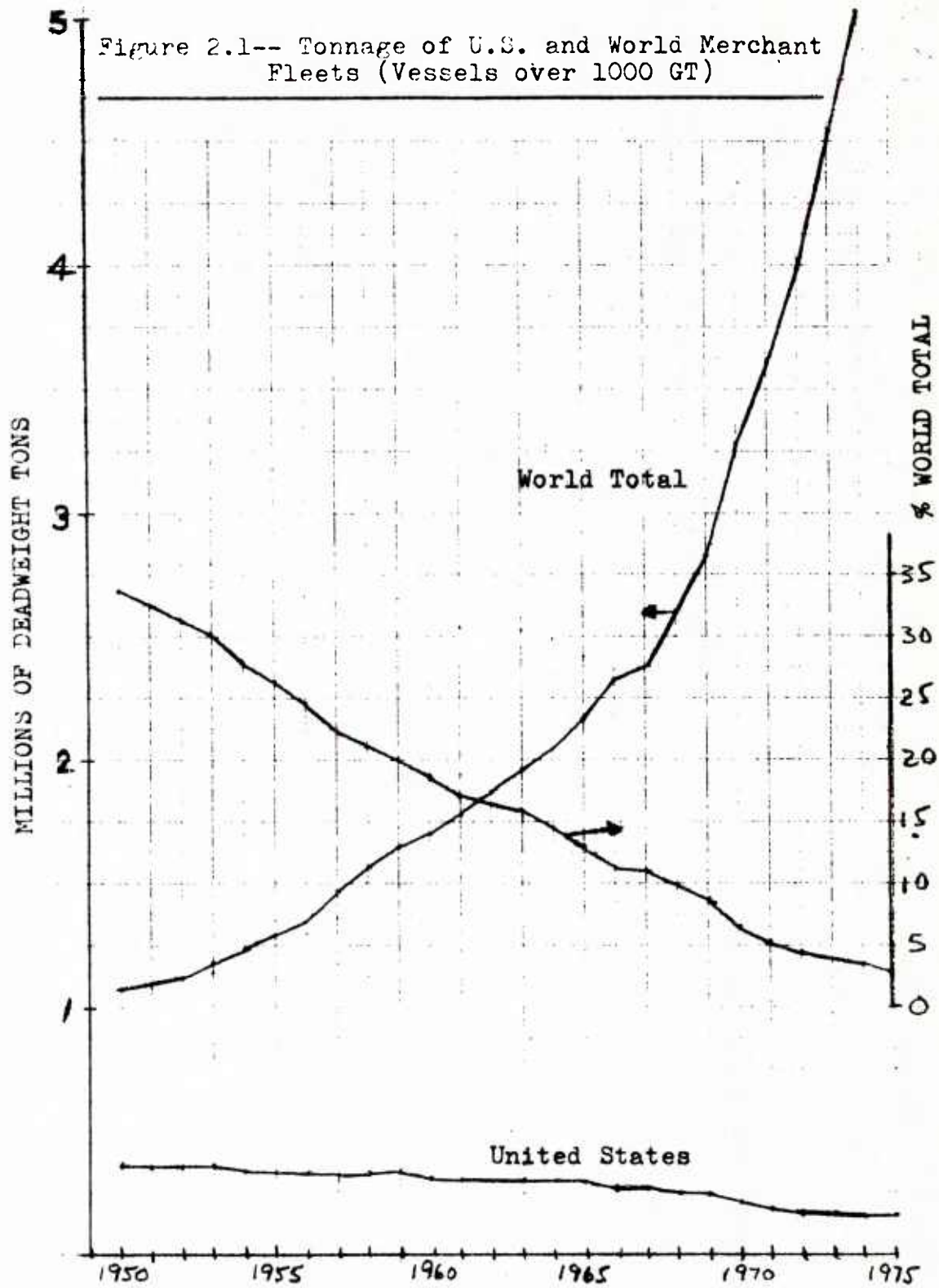
Year	Number	Gross Tons	Deadweight Tons
1950	26	405,617	652,093
1951	10	147,569	183,032
1952	31	398,750	547,742
1953	45	570,395	882,180
1954	39	585,052	928,943
1955	9	119,104	150,701
1956	8	113,298	184,400
1957	21	320,399	502,778
1958	31	587,974	886,484
1959	31	734,119	1,206,292
1960	25	389,197	585,808
1961	25	368,937	522,286
1962	27	391,608	499,355
1963	35	417,966	527,169
1964	16	214,980	299,549
1965	13	172,687	237,178
1966	13	145,824	195,726
1967	15	165,278	168,576
1968	24	326,892	420,143
1969	22	409,558	627,568
1970	13	315,926	543,310
1971	15	453,526	648,369
1972	15	448,350	686,780
1973	31	834,250	1,214,370
1974	27	739,665	1,243,700
1975	17	524,740	839,370

source: Marine Engineering/Log

world's gross tonnage of major vessels (1,000 gross tons and over), in 1946 it had soared to nearly 51% of the world's tonnage and easily the largest merchant fleet (see Figure 2-1). This period was truly the heyday in history for the U.S. shipbuilding industry.

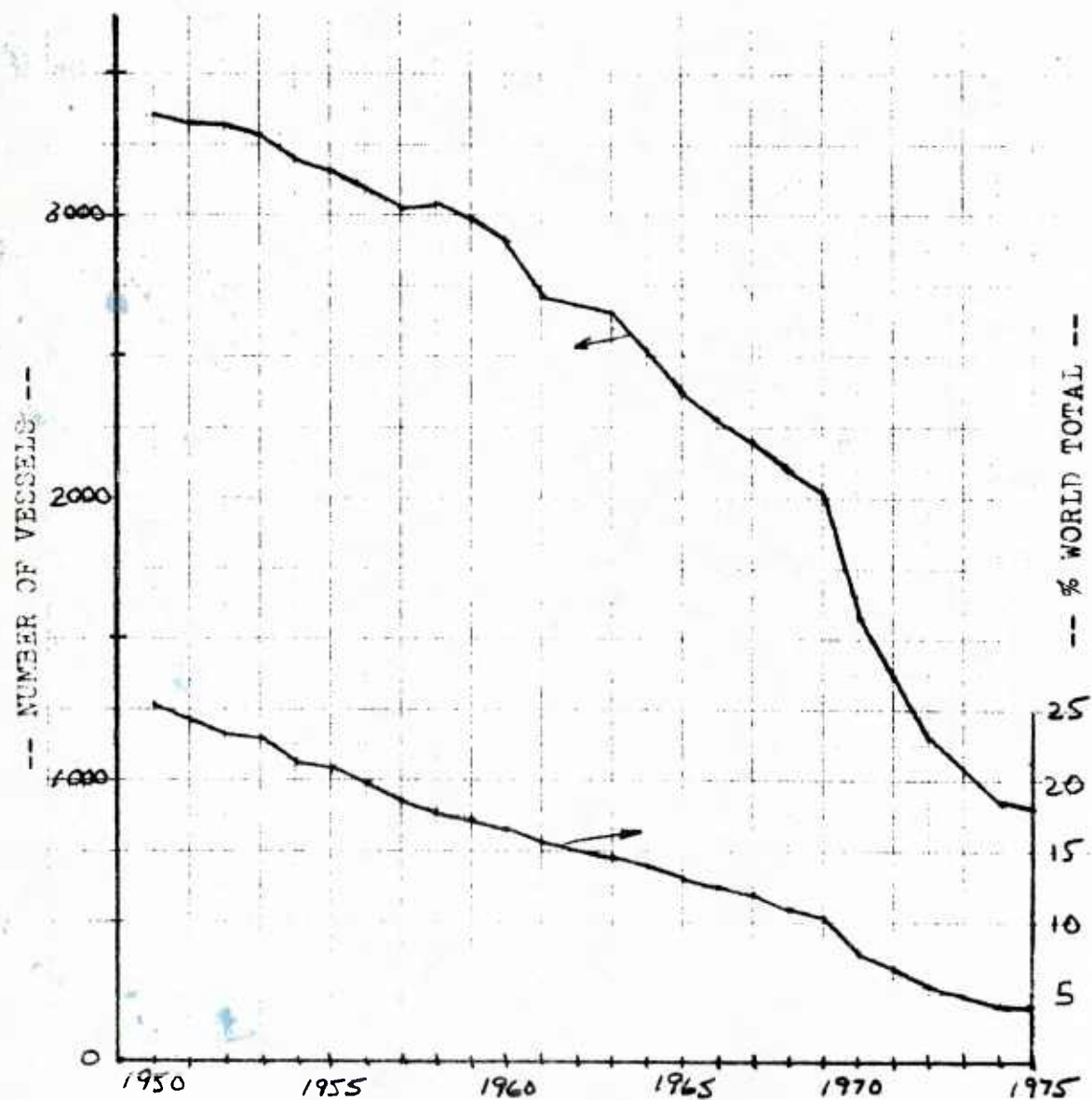
After the war had ended, the government began the process of transferring the large fleet to private ownership. Over 1100 vessels were sold for foreign registry during the period 1945 to 1948 [9, p. 30]. At the same time, U.S. buyers were given the opportunity to purchase vessels at bargain prices through passage of the Merchant Ship Sales Act of 1946. Under this act nearly 750 ships were transferred to private U.S. ownership [9, p. 139]. Over 1400 remaining unpurchased and unneeded vessels were laid up in the National Defense Reserve Fleet [58, p. 42].

The war produced no lasting benefit for either the shipping or shipbuilding industries. Both continued a steady decline until about 1970. The merchant fleet steadily contracted (see Figure 2-2), falling from the top five world fleets by 1970. The U.S. fleet share of the United States oceanborne foreign trade plunged from nearly 58% in 1947 to less than 5% (by tonnage) in 1969 (see Figure 2-3). The shipbuilding industry also suffered a drastic cutback in production. The reduction in demand for new shipbuilding caused many shipyards to close. This situation has continued to the point that shipyards active in major



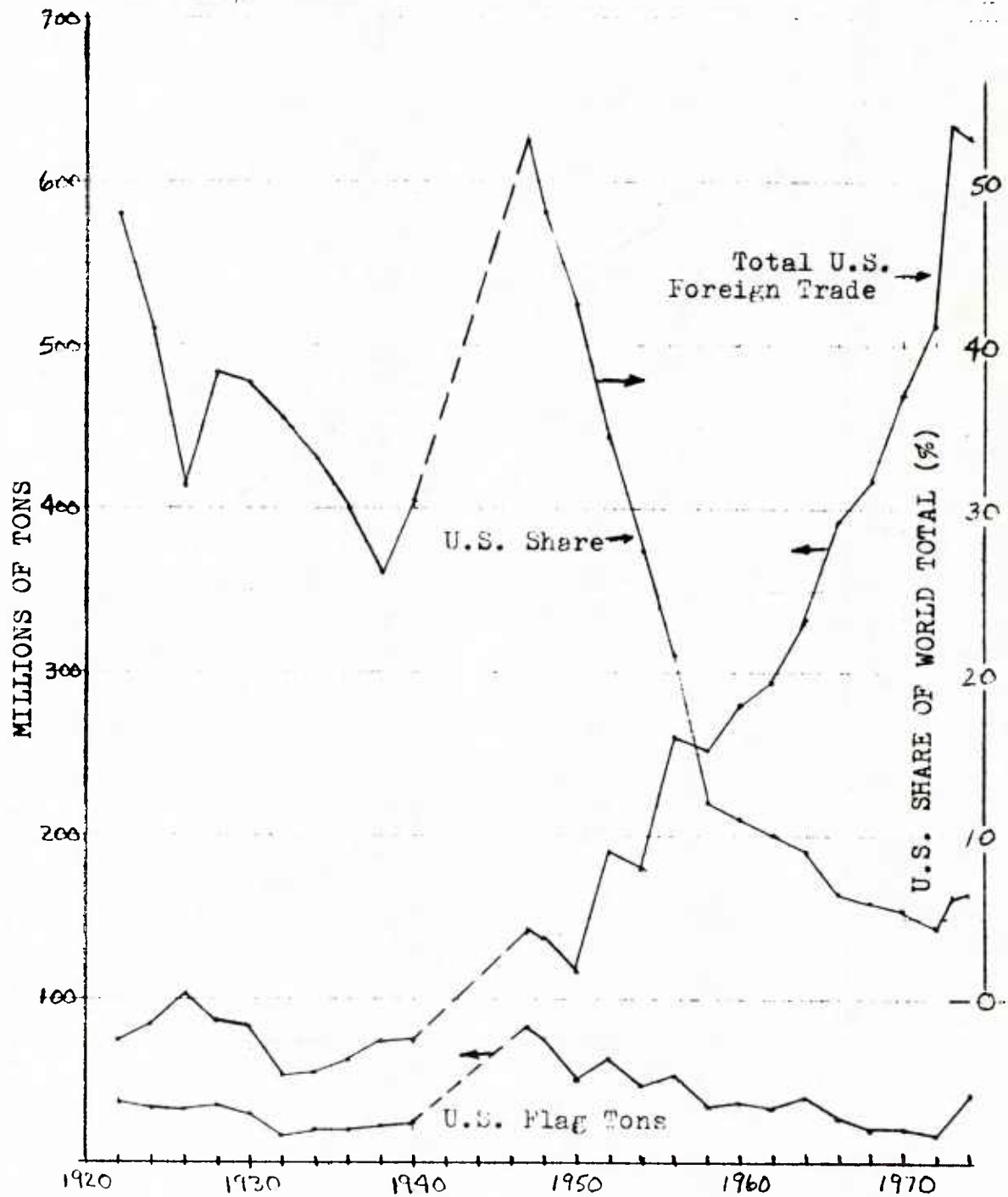
source: Maritime Administration

Figure 2.2-- Size of U.S. Merchant Fleet (Vessels over 1000 GT)



source: Maritime Administration

Figure 2.3-- United States Oceanborne Foreign Commercial Cargo Carried



source: Maritime Administration

ship construction has declined from over fifty in 1947 to fifteen in 1970; however, other shipyards, such as Litton and National Steel and Shipbuilding, have emerged to become strong forces within the industry.

In contrast to the mounting obsolescence and reduction of the United States flag fleet, the fleets of other nations such as Great Britain, Japan, and Norway, became progressively larger and faster and gained a significant competitive advantage over the U.S. fleet. As recently as 1970, the average age of the U.S. flag fleet was 22 years as compared to 7 years for Japan and 11 years for the United Kingdom fleets. The trend indicated an aging U.S. fleet while Japanese and United Kingdom fleets were growing younger [47]. Additionally, the foreign shipbuilding industries were rebuilt and modernized. It became evident that by 1980 the U.S. fleet would be reduced to only about 200 ships able to carry less than 3% of the U.S. oceanborne foreign trade unless corrective measures were promptly instituted. With this forecast, the President announced a reaffirmation of the national policy for a strong and modern merchant fleet and efficient shipbuilding facilities expressed previously in the Merchant Marine Acts of 1920 and 1936. A new maritime program, providing government impetus to make the U.S. maritime industries more competitive and to restore the U.S. fleet to prominence, was embodied in the Merchant

Marine Act of 1970. Its intent was to revitalize the shipping and shipbuilding industries by providing for construction of a large number of modern, highly productive ships. The main features of this Act are [69, p. 1188, 47]:

1. A program to rebuild the merchant fleet with ships of advanced design with improved competitiveness to be built with federal assistance over a ten-year period. Emphasis is placed on development of ships of standardized design and the introduction of series production techniques.
2. Construction-differential subsidies to be paid directly to the shipbuilder to encourage improved design and efficient operations.
3. New contracting techniques such as negotiated subsidy contracts and multi-year procurement.
4. All types of bulk carriers, for the first time, are eligible for ODS and CDS aids.
5. A greatly expanded federal ship mortgage insurance program designed to encourage more private financing of new construction.
6. A new capital construction fund program allowing tax deferrals of income for ship replacement.
7. Expanded and reoriented maritime administration research and development program.
8. A descending scale of CDS rates set as the targeted goal to challenge the shipbuilding industry to produce ships at reduced costs.

The period since 1970 has, for a number of reasons, been one of paradox. There has been a drastic increase in shipyard backlog levels from less than 2.2 million gross tons (worth approximately \$2.5 billion) of major merchant and naval ships building or on order at the end of 1969 to nearly 5.3 million gross tons (worth approximately \$9.6 billion) by the end of 1975, with a peacetime record high backlog of over 5.7 million gross tons in 1975 [57]. Also, signs are that the steadily decreasing U.S. flag fleet share of the U.S. oceanborne foreign trade may have been checked and begun to rise slowly. These are coupled with a continued narrowing of the cost gap between the U.S. and foreign shipbuilders, for, although U.S. costs are continuing to rise, foreign costs are increasing at a faster rate.

What seems to indicate a prospering U.S. shipbuilding industry only tells half of the story, however. Even though the past and present orderbooks are favorable, the future is quite uncertain. Due to the Arab oil embargo and subsequent skyrocketing price of oil, the market for tanker shipbuilding has essentially collapsed. Additionally, the effects of inflation in shipbuilders' costs have resulted in severe financial losses on fixed-price contracts. The market response to this situation has been the scrapping and laying-up of older tankers and cancellation of numerous shipbuilding contracts. In 1974, when troubles were

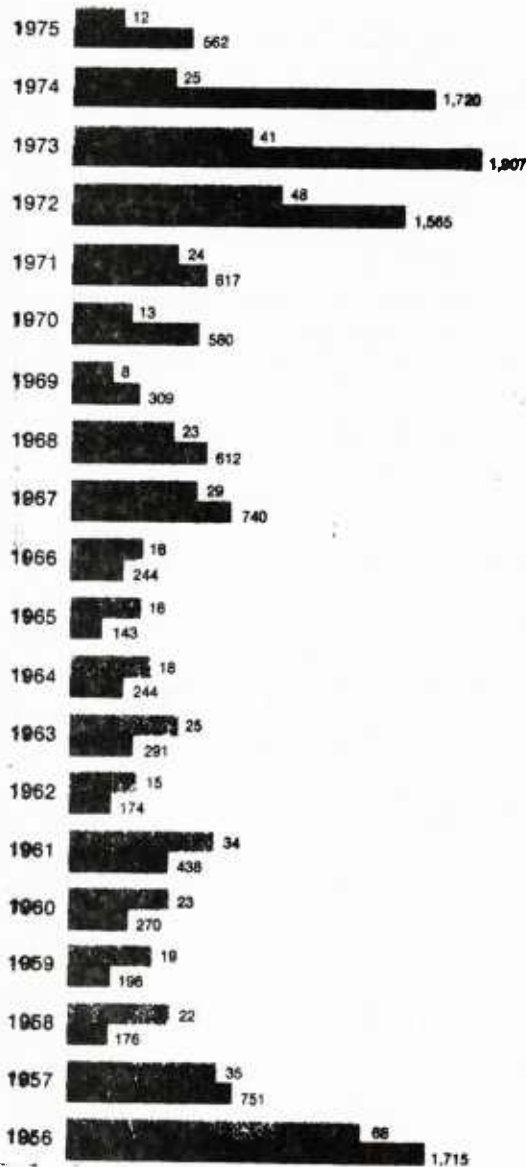
beginning to mount, there were two tanker cancellations, totalling nearly 33,000 gross tons. However, in 1975 the situation has been much more severe, with twelve tanker cancellations amounting to 544,800 gross tons [57]. As shown in Figure 2-4, the number of new shipbuilding contracts has also fallen off greatly in the past two years. In 1975 alone, the number of new contracts fell to less than one-third of that for 1974. With the prospects for new building programs not encouraging, shipyard workload will be the present, declining backlog; therefore, the future prosperity of the U.S. shipbuilding industry is at best uncertain.

Figure 2.4-- Merchant and Naval Vessels (1000 gross or light displacement tons or more) Ordered From Private Shipyards Since 1956

Merchant Vessels

NO. OF SHIPS

TONS IN THOUSANDS



Naval Vessels

NO. OF SHIPS

TONS IN THOUSANDS



source: Shipbuilders Council of America

CHAPTER 3

MAJOR GOVERNMENTAL PROGRAMS AND POLICIES AFFECTING
THE U.S. SHIPBUILDING INDUSTRY

Throughout the historical development of the U.S. shipbuilding industry has been woven the thread of influential governmental programs and policies. The maritime industries have been officially placed in national priority since the Merchant Marine Act of 1920. The national policy for encouraging the growth and maintenance of the maritime industries has been reinforced and modernized through further legislation to the recent 1970 Act. Through this policy, the federal government has acted to influence and protect the state of both the shipping and shipbuilding industries. The nature of this governmental activity in the shipbuilding industry takes on the proportions of not only the external-type governmental relationship, but also that of a direct participant, for, as will be observed, the federal government is by far the single largest entity involved in the U.S. shipbuilding market. Consequently, governmental policies and programs dealing with the maritime industries in general, and the shipbuilding industry in particular, will be of great significance. The most important of these will be discussed in this section.

3.1 Major Governmental Agencies Involved

Due to the magnitude and diversity of government involvement in the maritime industries, numerous administrative agencies have been established over the years to oversee particular government programs and legislation. The Maritime Administration and the U.S. Navy are the agencies of primary importance in administering shipbuilding programs. These two primary agencies will be briefly discussed, along with some others which, although of less importance, exert important influences upon the shipbuilding industry.

A. Maritime Administration (MarAd)

The Maritime Administration was established in 1950 as an agency of the Department of Commerce to administer the Merchant Marine Act of 1936 and related maritime legislation. The chief executive of MarAd is appointed by the President as an Assistant Secretary of the Department of Commerce for Maritime Affairs. MarAd is responsible for fostering the development of the U.S. merchant marine, built, owned, and manned by U.S. citizens, capable of carrying the U.S. domestic waterborne commerce as well as a substantial portion of the foreign trade, and capable of serving as a military auxiliary during times of national emergency. This is the basic national maritime policy as set forth by the Merchant Marine Acts of 1920, 1936, and 1970.

The primary MarAd impact upon the shipbuilding industry derives from its administration of the construction-differential subsidy program through its Maritime Subsidy Board (MSB). The Board is composed of the Assistant Secretary, his Deputy and the MarAd General Counsel. The function of the MSB is to administer the operating and construction-differential subsidies via authority vested in the Secretary of Commerce. It also conducts hearings and investigations to determine the relative U.S. and foreign costs of operating and constructing ships. MarAd also administers other programs which are of more direct impact upon the shipping industry, but still provide indirect aids to the shipbuilding industry. These will be further detailed in the next section. Other activities include participation in international activities affecting U.S. flag shipping, marketing programs to help U.S. operators increase their participation in the carriage of U.S. foreign trade, promotion of the development of efficient U.S. ports and advanced intermodal transportation systems, training of officers and crew to man American ships, and maintenance of the National Defense Reserve Fleet [79, Section 1].

B. U.S. Navy

The Navy is an agency of the Department of Defense headed by a civilian administrator appointed by the President as the Secretary of the Navy. The Naval Sea Systems Command

is the office within the Navy Department which is most involved in Naval Shipbuilding. The Commander, Naval Sea Systems Command, is designated as the coordinator of shipbuilding, conversion, and repair for the Department of Defense. Therefore, he is not only responsible for the award and administration of contracts for the acquisition and conversion of Navy ships, but also for procurement of ships and boats for delivery to MSTs, Army and Air Force, and foreign countries under mutual defense assistance programs. The Commander is a Navy Vice Admiral and headquartered in Washington, D.C.

C. U.S. Coast Guard

The Coast Guard is an agency within the Department of Transportation that is headed by a Coast Guard Admiral acting as Commandant. It is the primary maritime law enforcement agency of the federal government. This along with the Coast Guard shipbuilding program are the major aspects which impact upon the U.S. shipbuilding industry. The federal safety standards for U.S. flag vessels are considered generally to be more stringent than those for other nations. The responsibilities for inspection of merchant vessels and their equipment lies with the Office of Merchant Marine Safety, headed by a Coast Guard Rear Admiral. Responsibilities for administration of Coast Guard shipbuilding contracts falls to the Chief of

Engineering, also a Rear Admiral. Both of these offices report to the Commandant of the Coast Guard and are headquartered in Washington, D.C.

D. Congressional Committees

Numerous Congressional committees deal in some way with the myriad aspects of the U.S. shipbuilding industry. Of primary importance, however, are two committees in the House of Representatives and the Senate--the Committee on Armed Services and the Committee on Merchant Marine and Fisheries. The impact of these committees lies in their major roles in appropriations and maritime legislation affecting naval and merchant shipbuilding programs. Within the House Armed Services Committee, the Seapower Subcommittee is very active in shipbuilding affairs, holding extensive hearings covering nearly all aspects of U.S. shipbuilding and publishing a detailed report, the most recent of which is the Status of Shipyards-1974. Of similar import is the Merchant Marine Subcommittee of the Merchant Marine and Fisheries Committee, whose primary involvement is in merchant shipbuilding affairs as impacting upon the merchant marine.

E. Military Sea Transport Service (MSTS)

The MSTS is the part of the U.S. Navy which administers the shipment of all waterborne military cargo. It operates a nucleus fleet of merchant and converted naval vessels and charters both private vessels and private companies to

operate government-owned vessels as required to fulfill the needed capacity.

F. Maritime Regulatory Agencies

Many independent federal agencies oversee and regulate various aspects of the shipbuilding industry. The two of most importance are the Federal Maritime Commission (FMC) and the Interstate Commerce Commission (ICC). The FMC regulates competitive practices of common carriers involved in waterborne U.S. commerce and is separate and distinct from MarAd. The ICC regulates rates and services of the domestic maritime fleet.

3.2 Federal Aid Programs for the Shipbuilding Industry

As with most other shipbuilding nations, the United States has established federal programs and regulations to provide economic advantages and protections for her maritime industries. The government grants this public aid in order to achieve certain political, economic, and military objectives as in the philosophy of the national maritime policy embodied in the Merchant Marine Acts of 1936 and 1970. The rationale offered as justification for such aids to the U.S. maritime industries include: (1) the importance of the maritime industries to the national security; (2) the benefits of a prosperous merchant marine to the national

balance of payments; (3) favorable employment effects of additional jobs for Americans ashore and at sea; (4) the promotion of U.S. commerce; and (5) national prestige [27 and 46]. It will not be the purpose of this study to critically examine the validity or appropriateness of these justifications. Numerous other studies presently available provide in-depth analysis of the federal assistance programs and provide alternatives for change felt appropriate by various authors [2, 16, 27, 46 are examples]. Suffice it to say that federal assistance to the maritime industries is an important national priority, the primary rationale for which appears to be national security.

The federal government has at its command numerous means by which to provide assistance to the shipbuilding and shipping industries. These means can be roughly classed as either fiscal or non-fiscal in nature. Fiscal assistance is rendered via the government's taxing or spending powers and include such means as direct government subsidy programs, preferential purchase of goods and services, and tax advantages. Non-fiscal programs involve the exercise of the government's regulatory powers and include the numerous types of preferential legislation and priorities in national policy. Most programs, however, will include both fiscal and non-fiscal features. The first means, direct government subsidy payments, seems to be the most prevalent throughout world shipbuilding nations, and in the United States is

surely the most visible, if not the most influential, type of federal assistance program. Most of the U.S. aid programs, whether fiscal or non-fiscal in nature, are administered by the Maritime Administration.

The major federal assistance programs which impact upon the U.S. shipbuilding industry will be discussed in this section. They will be further classified as direct, those whose primary purpose and effect are to directly benefit the U.S. shipbuilding industry, and indirect, those whose primary purpose and effect will directly benefit some other sector, generally the shipping industry, but which provide major incidental benefit to the shipbuilding industry.

A. Direct Fiscal Programs

1. Construction-Differential Subsidy (CDS)

The construction-differential subsidy was established by Title V of the Merchant Marine Act of 1936 and later expanded by the amendments embodied in the Merchant Marine Act of 1970. It is the only subsidy program which is directed in its primary effect toward the shipbuilders, and is probably the most important to the industry. In essence, CDS permits a U.S. firm to construct a vessel in a U.S. shipyard at a cost which is equivalent to that for constructing the same vessel in a foreign shipyard. This differential between the foreign and domestic building costs is provided as an unrequited payment (subsidy) from the

government directly to the shipbuilder. Aside from new construction, under certain circumstances CDS may be paid for reconstruction and reconditioning of existing vessels. Because of the higher U.S. shipbuilding costs, the subsidy is deemed necessary in order to place the U.S. shipbuilder on par with foreign yards, and is intended to encourage growth and maintenance of the U.S. maritime industries and, thereby, to ensure a degree of national self-sufficiency in these industries [75].

The actual amount of the CDS is calculated by the Maritime Subsidy Board of MarAd. It determines the foreign cost as an estimate of the building cost for the particular type of vessel in a representative foreign shipbuilding center chosen by the MSB. No such estimation is made for the domestic building cost. Instead, the buyer negotiates with shipyards for the price of the vessel to be built. Then, either the purchaser or the U.S. builder may apply to MarAd for the CDS. If the price is accepted, MarAd pays the difference between the actual domestic price and the estimated foreign cost as the construction subsidy.

No matter which party applies, the ultimate purchaser is subject to the following general eligibility requirements of Title V for the award of CDS [75]:

1. The prospective purchaser must be a U.S. citizen as defined by the Shipping Act of 1916;

2. The shipyard which will construct the ship must be located in the United States;
3. The ship must be built for use in U.S. foreign commerce;
4. The prospective buyer must have the necessary ability, experience, financial resources and other qualifications for the acquisition, operation, and maintenance of the proposed new vessel;
5. The ship to be built must:
 - a. meet the requirements for U.S. foreign commerce, be capable of aiding the promotion and development of such commerce, and be suitable for use by the U.S. for national defense or military purposes in time of war or national emergency;
 - b. be documented under laws of the United States for 25 years (20 years for tankers and other liquid bulk carriers);
 - c. be manned entirely by U.S. citizens; and
 - d. be operated in the U.S. foreign commerce (except as provided in the Act); and
6. If the United States purchases or requisitions the vessel, the owner shall be paid the depreciated original construction cost or the scrap value, whichever is greater.

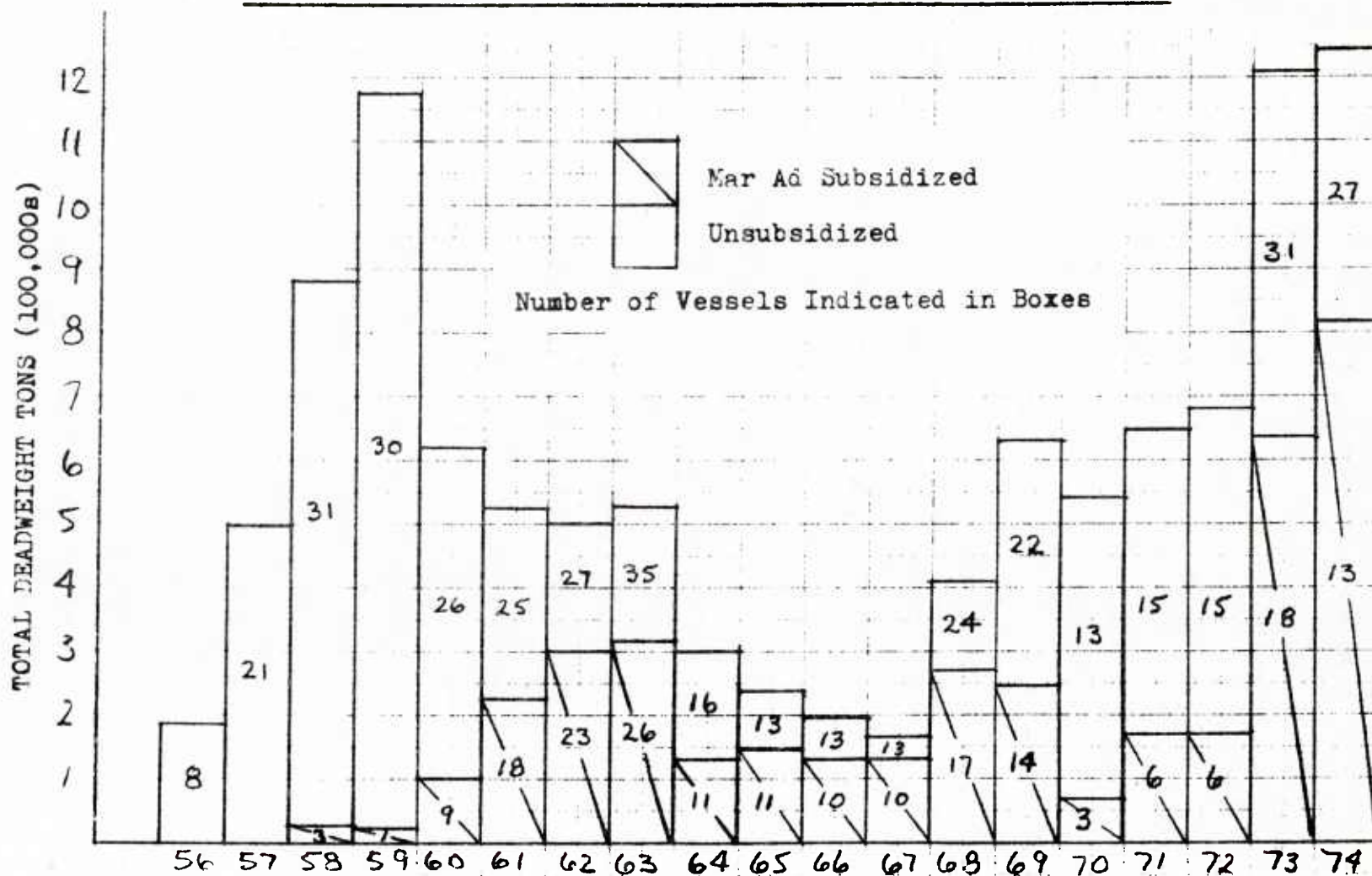
By the amendments of the 1970 Act, future improved domestic shipyard productivity was contemplated; therefore,

the goal was set for progressive reductions in the maximum CDS rate of 2% per fiscal year to a level of 35% in FY 1976. This goal is a mandatory ceiling for negotiated contracts. If the construction price is arrived at by competitive bids, the maximum CDS rate is 50% as long as it does not exceed the negotiated contract ceiling level. Additional provisions have been made for payment of costs for "national defense features." If the Navy recommends that certain features be incorporated into a proposed CDS merchant vessel in order to enhance its military value and MarAd determines that these features are of no commercial use to the owner, the entire cost of these items will be paid by the government in addition to the CDS. A view of the historical trends of the number of vessels under the MarAd CDS program and the recent extent of the program can be derived from Figure 3-1.

2. Preferential shipbuilding

The Merchant Marine Act of 1936, as amended, also required the Departments of the Navy and Commerce to annually review the existing privately-owned shipyards capable of merchant shipbuilding to determine if their capabilities and capacities are sufficient for national defense mobilization at strategic points in time of national emergency. A means provided for correcting deficiencies in this regard is the preferential award of

Figure 3.1-- Subsidized and Unsubsidized Merchant Vessels
(over 1000 DWT) Delivered Since 1956



government-sponsored or subsidized shipbuilding contracts to deficient shipyards in the interest of national security [70, p. 91]. Such action was taken in 1958, when the Maritime Administration allocated contracts for general cargo ships to National Steel and Todd (San Pedro) to correct an apparent deficiency in the shipbuilding base on the West Coast. No other allocations of MarAd ship construction have been made since that time. The Act also required annual reports on this subject, the most recent of which is the "Annual Report on the Status of Shipbuilding and Ship Repair Industry in the United States-1975" prepared by the Coordinator of Shipbuilding, Conversion and Repair, DOD (who is also the Commander, Naval Sea Systems Command).

B. Indirect fiscal programs

1. Operating-Differential Subsidy (ODS)

The operating-differential subsidy program was established by Title VI of the Merchant Marine Act of 1936. As described earlier, this form of public assistance to the merchant marine was adopted to replace other forms of direct financial aid such as the scandal-ridden mail contract program of the 1928 Act. ODS is primarily oriented towards the U.S. shipping industry, but provides indirect aid to the U.S. shipbuilding industry through additional market protections and encouraged shipbuilding in U.S. shipyards.

ODS is paid to qualified U.S. flag vessel operators for the operation of vessels in essential services in the U.S. foreign commerce. Parallel to the CDS program, this program seeks to place the U.S. flag operators on par with their foreign competitors by equalizing the differential in operating costs. Originally the program was limited to the operation of liner services in the U.S. foreign trade, but was broadened to include bulk carriers by the 1970 Act. The ODS program provides for "fair and reasonable costs of wages for officers and crew, insurance and maintenance and repairs not compensated by insurance" in excess of the estimated cost of the same cost items if the vessel was operated under the flag of a substantial foreign competitor [77]. Additionally, MarAd is authorized to pay a differential subsidy for any other cost item whose higher U.S. cost puts the operator at a substantial disadvantage with its foreign competitors or whenever necessary to offset the effects of government foreign aid [27, p. 20]. Other substantial cost items such as stevedoring and fuel are not subsidized because both foreign and U.S. operators face essentially the same costs for these items. These unsubsidized costs represent roughly 60% of the total operating costs. The subsidy rates are computed separately for each trade route based upon a weighted average of the foreign competitors and vessels comparable to those for which ODS is sought. The actual

amount of the subsidy is then the product of the subsidy rate and the subsidizable operating expenses [16, p. 45-50].

To be eligible for the ODS, an operator must:

1. be a United States citizen;
2. possess the ability, experience, and financial resources to conduct the proposed operations in an efficient and economical manner;
3. be willing to lease or purchase vessels in sufficient number and type to maintain competitive service in the proposed trade;
4. be financially capable to undertake a long-term contract agreement with MarAd;
5. not operate any foreign flag vessels which compete with an essential American flag service; and
6. not be engaged in domestic trade.

Vessels eligible for ODS include all modern types of cargo-carrying ships whose designs are satisfactory for operation in essential U.S. foreign trade. The ships must be built in the U.S. and controlled and manned by U.S. citizens. In return for the ODS, the operator accepts certain contractual obligations such as maintenance of U.S. citizenship, operation of the ships in an efficient and economical manner, replacement of overage ships, refraining from domestic or foreign-flag operations, and ship maintenance and repair in American facilities [77].

The levels of annual ODS and CDS expenditures for the past two decades are shown in Figure 3-2.

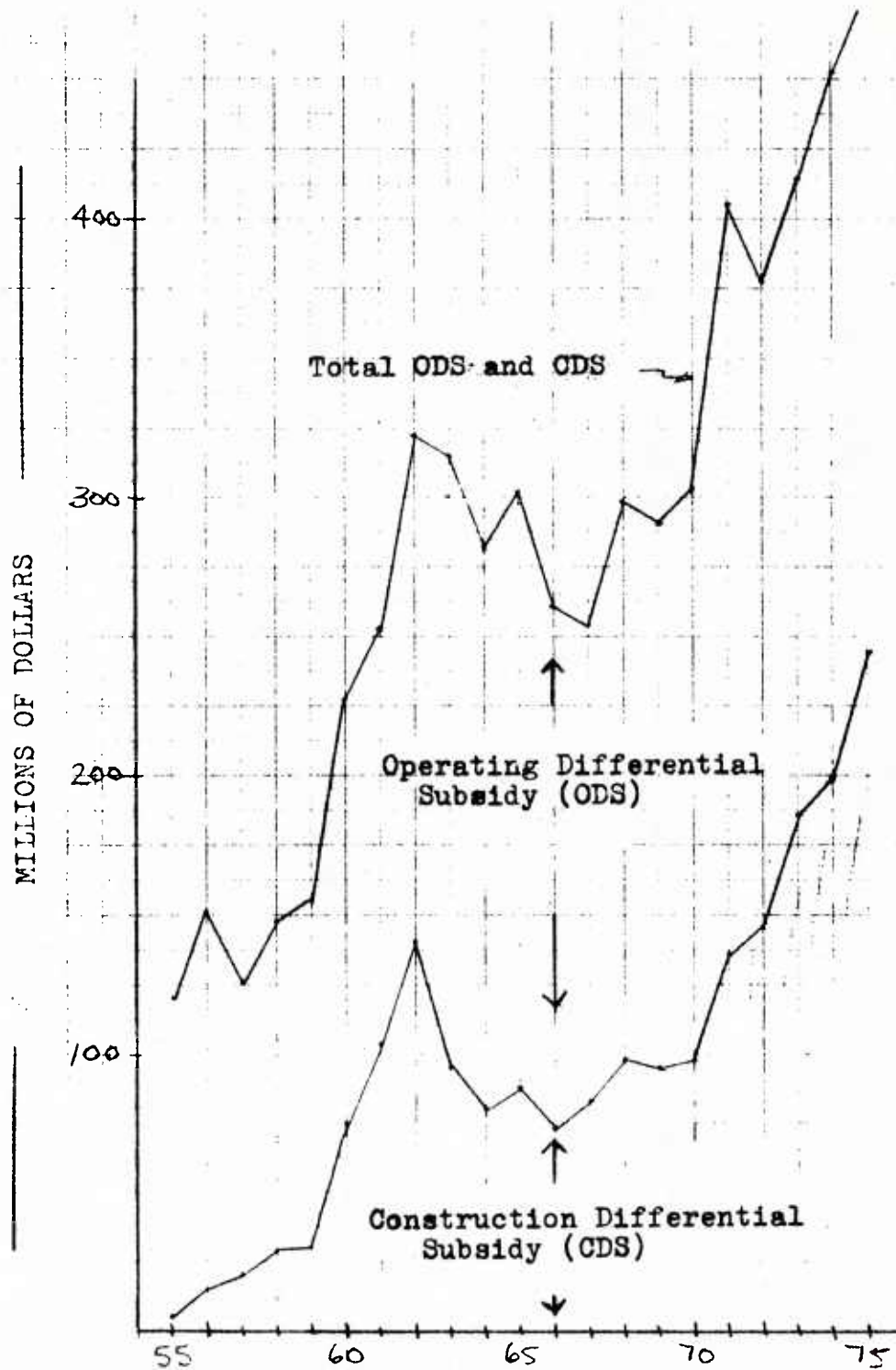
2. Capital Construction Fund (CCF)

The shipping industry is the primary beneficiary of the tax subsidy form of federal financial aid which is not granted to other U.S. industries. By these, various types of funds are protected from tax; consequently, the federal government subsidizes the shipowners' expenditures for new vessels and equipment. In order to qualify for a tax subsidy, the shipowners must buy from U.S. shipbuilders and manufacturers; thus indirectly benefiting shipbuilders through increased demand for their products.

The capital construction fund program was established by the amendments to the Merchant Marine Act of 1936 embodied in the 1970 Act. The CCF replaced the capital reserve funds that were required for subsidized operators and other special reserve funds of the 1936 Act. Its purpose is to provide a means to aid the shipowners in accumulating the large amounts of capital needed to properly modernize and expand the U.S. merchant fleet, and it is administered, so far as the shipping industry is concerned, by MarAd.

CCF program privileges are available not only to operators engaged in U.S. foreign trade, but also to those engaged in the Great Lakes and non-contiguous domestic trade. To be eligible, an applicant must [74]:

Figure 3.2-- Maritime Subsidy Expenditures, 1955-1975



source: Maritime Administration

1. be a U.S. citizen;
2. own or lease eligible vessels;
3. have a program which furthers the purposes of the 1970 Act and provides for the acquisition, construction, or reconstruction of an eligible vessel; and
4. demonstrate the financial capabilities to accomplish the program.

Eligible vessels are vessels constructed or reconstructed and registered in the U.S. that operate in U.S. foreign or domestic trade.

Basically, the fund is divided into three accounts, depending upon the manner in which the funds would be taxed if not deposited in the CCF. These are the capital account, capital gain account, and the ordinary income account. The CCF program provides for the deferral of federal income taxes on certain deposits of money or property into the CCF accounts. These deposits may be earnings from vessel operations, net proceeds from sale, insurance or indemnification for loss of a vessel, or earnings from investment of deposited funds. The fund holder may then periodically withdraw funds for the acquisition, construction, or reconstruction of vessels built in the U.S., to repay vessel mortgages or to reinvest in an approved investment program [74].

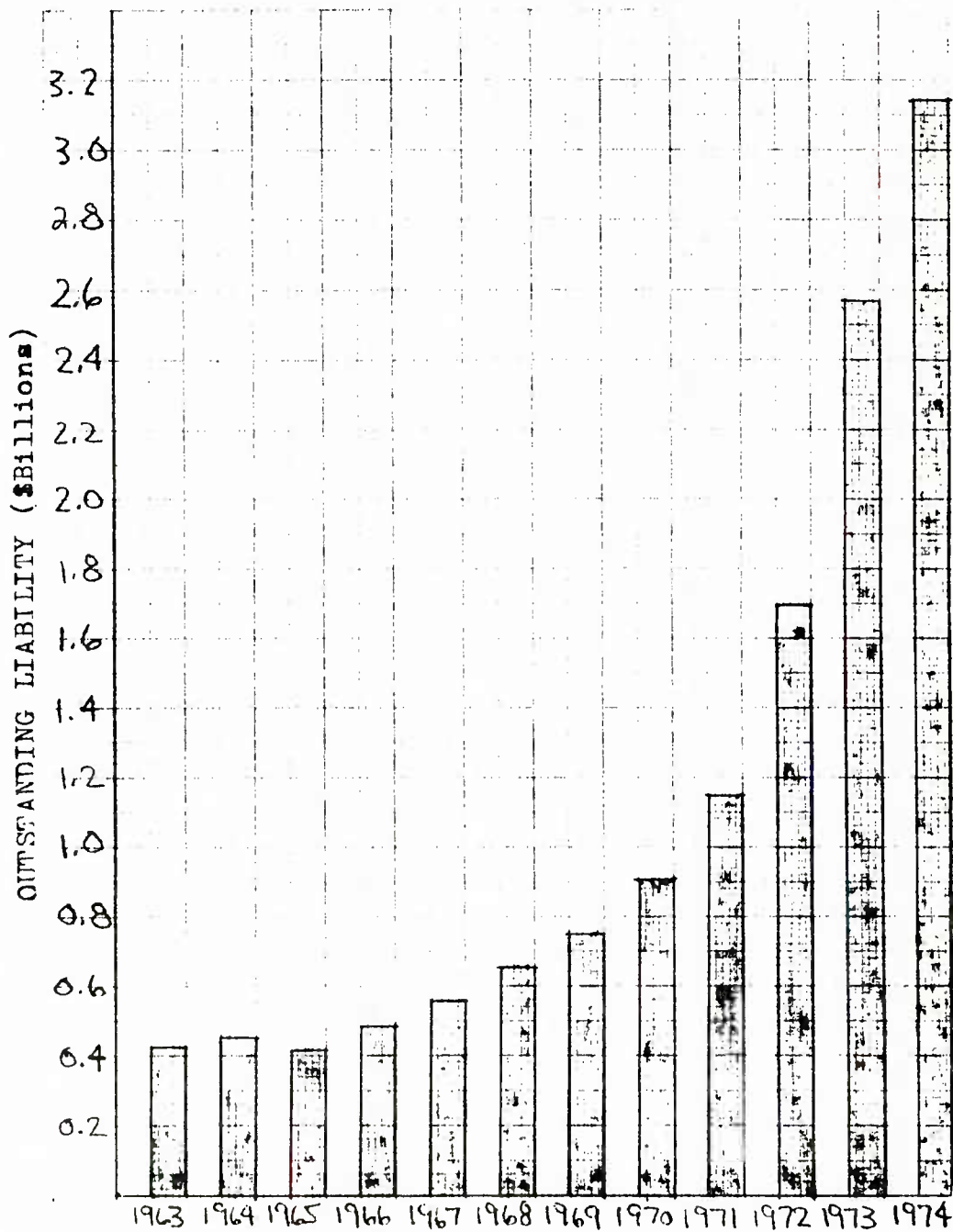
3. Federal ship financing program

The federal ship financing program is administered by the Maritime Administration like almost all of the significant federal maritime aid programs. It was established under Title XI of the Merchant Marine Act of 1936 for the purpose of promoting the growth and modernization of the U.S. Merchant Marine by issuing guarantees of obligations to enable the financing and refinancing of vessels constructed in the United States and owned and operated by U.S. citizens. The program enables the owners of eligible vessels to obtain long-term financing on favorable terms and conditions and at interest rates that are comparable to those available to large and financially strong corporations. Direct government financing of shipbuilding loans at low interest rates has also been authorized by the Act, but has not been appropriated by Congress in recent years; consequently, the loan guarantee program has been necessary since such favorable financing terms are usually not available to the average shipbuilder. The actual funds are obtained from the private sector [76].

For eligibility, the vessel must be greater than 25 gross tons, of a design with adequate engineering for its intended use, American-built and -operated, and in ABS class A-1. The owner must be a U.S. citizen, have sufficient experience and ability to operate the vessel on

a sound, economical basis and satisfy certain financial requirements. If the application for Title XI financing is approved, the Secretary is authorized to guarantee an obligation not to exceed 75% of the actual cost of most eligible vessels. Exceptions permitting guarantees up to 87.5% of the actual cost of construction include ocean-going vessels greater than 2500 horsepower capable of a 40-knot sustained speed and vessels greater than 3500 gross tons capable of a 14-knot sustained speed, among others for inland waterway use. The maximum guarantee period is 25 years from date of delivery unless extended due to reconstruction. Amortization in equal payments of principal is usually required and the interest rate of the obligation guaranteed must be within the range of interest rates prevailing in the private market for similar loans. Two fees are charged for the privilege of using the federal ship financing program. A one-time investigation fee of usually one-eighth of one percent is charged for administrative preparations by MarAd and an annual guarantee fee of between one-half and one percent of the outstanding obligation per year. The funds are used to maintain a revolving fund for the purpose of underwriting the government guarantee and to pay expenses of the program [76]. Figure 3-3 presents historical and recent data for the federal ship financing program.

Figure 3.3-- Federal Ship Financing Guarantee Program
(Title XI) Expenditures



source: Maritime Administration

C. Non-fiscal programs

1. Cabotage laws

Cabotage laws are those laws which reserve the trade along a nation's coast to ships of the national fleet. The first U.S. cabotage laws were enacted through legislation in 1817. These laws have been revised, modernized and expanded through our history, and, except for a brief hiatus during World War I, have continued in force to this day. The current cabotage laws of the United States are scattered about Title 46 of the U.S. Code. The most direct reservation of the U.S. coastal trade for U.S.-built vessels appears in the Merchant Marine Act of 1920 (commonly called the Jones Act) which, among other important sections, re-established the cabotage laws following World War I. The most important results of the cabotage laws are to reserve U.S. coastal trade to vessels of domestic construction; to reserve the transport of passengers between U.S. ports to U.S. vessels; to ban the landing of foreign fishing vessels or their catches in U.S. ports; to prohibit foreign tugs from towing U.S. vessels or foreign salvors from engaging in salvage operations in U.S. waters; and to prohibit dredging of U.S. waters by foreign dredges. These laws have also been expanded to include the nation's territories and possessions [27, Chapter 5]. The benefits to the shipbuilding industry are those to be derived from protected markets and economic advantages for its merchant market--a protected source of business.

2. Cargo preference

Cargo preference laws are a very significant aid to the U.S. shipping industry and benefit the shipbuilding industry in an indirect manner resulting, again, from the semi-protected shipping markets. As a body, the group of federal statutes comprising the cargo preference laws require that not less than a stated fraction of "government cargoes," usually 50%, moving by sea in foreign commerce be carried by U.S. vessels. The definition of "government cargoes" is peculiar to the specific intent of each of the particular laws. Three of the most important cargo preference laws are the Military Transport Act of 1904, Public Resolution 17 (1934) and the Cargo Preference Act of 1954. The Military Transport Act of 1904 is the oldest current preference law, and it requires that all shipments of the U.S. armed services moving by sea must be carried either by U.S. registry or U.S.-owned vessels. As was previously mentioned, the MSTL is the predominant factor involved. Public Resolution 17 of 1934 reserves all Export-Import Banking-generated cargoes for U.S.-flag vessels, although not having the force of law. The Cargo Preference Act of 1954 is a widely inclusive act requiring that at least 50% (by tonnage) of all goods bought by the government for its own use or for foreign aid, or for which government credit or guarantee is

involved, must be shipped in privately-owned U.S.-flag vessels [27, Chapter 7].

3. MarAd shipyard R&D programs

Of direct impact upon the shipbuilding industry is the MarAd shipyard R&D program, which is conducted at various technical centers under the direction of shipbuilding firms. Under the program, MarAd and the shipyards share the cost of ongoing projects, but the shipyards are responsible for the technical management of the projects, planning of new projects, and assisting other U.S. yards in implementation of project results. The major areas for the R&D projects are welding, material handling systems, outfitting and production aids, surface preparation and coatings, computer aids in construction, production management information systems, ship producibility and shipbuilding automation [69, p. 1196-1200, 2].

4. Buy American Act

Title 41 of the U.S. Code, Section 10, requires that "manufactured articles, materials and supplies which are purchased for public use must be mined or produced in the United States and only such manufactured articles, materials, and supplies as have been manufactured in the U.S. substantially all from articles, materials, and supplies mined or produced in the U.S." This "Buy American" policy has been particularly applied to MarAd assistance

programs by Section 505 of the Merchant Marine Act of 1936 which states that "in all such construction the shipbuilder, subcontractors, materialmen or suppliers shall use, so far as practicable, only articles, materials and supplies of the growth, production or manufacture of the United States as defined in paragraph K of Section 401 of the Tariff Act of 1930." Therefore, MarAd programs such as CDS, CCF and federal ship financing are subject to the "Buy American" policy, except as specifically noted. As far as naval ship construction is concerned, this policy is directly applicable. Furthermore, amendments to the Military Appropriations Bills of 1965 and 1968 require that no major component of the hull or superstructure of a naval vessel may be built in any foreign shipyard.

5. Nuclear Navy Bill

The House Armed Services Committee authorization bill for FY 1975 states the following policy (Title VIII, Section 801):

It is the policy of the United States of America to modernize the strike forces of the United States Navy by the construction of nuclear-powered major combatant vessels and to provide for an adequate industrial base for the research, development, design, construction, operation, and maintenance for such vessels. New construction major combatant vessels for the strike forces of the United States Navy authorized subsequent to the date this Act becomes law shall be nuclear-powered, except as provided hereafter.

Strictly followed, this policy will have a great impact upon the composition of future naval shipbuilding. This is

especially the case in an environment of reduced funding for naval ship acquisition, in which an emphasis on a larger nuclear segment will drastically reduce the funds available for non-nuclear shipbuilding. The impact of this upon the shipbuilding industry will be manifest in the higher concentration of naval shipbuilding in the two shipyards capable of nuclear shipbuilding, Newport News and Electric Boat Division, with less new contracts going to other shipyards.

3.3 Naval Ship Acquisition Policies

Since World War II, the U.S. naval ship acquisition policies have undergone great change. To date, three distinct policies can be identified--the "conventional" policy after the war and lasting until about 1961, the "concept formulation/contract definition" policy of the era of Defense Secretary McNamara from about 1962 to 1969, and the present policy since 1970. The basic elements of each of these policies differ significantly; however, the basic process by which naval ships are procured has not changed greatly. Basic to the process are the initial identification of a need, the establishment of requirements based upon that need, and the selection, development, design and construction of a weapon system to fulfill the requirements. The Navy is responsible for identifying the need for a new weapon system and for

defining, developing, and producing the systems to satisfy the need. Establishment of overall acquisition policy, validation of needs, and monitoring of the program performance is the responsibility of the Secretary of Defense.

In this section, each of the three major procurement policies will be briefly discussed with particular emphasis upon those characteristics which impacted upon the shipbuilding industry and the results of that impact. For a general overview, Table 2 presents a brief comparative summary of the basic characteristics of the acquisition policies. Throughout the following discussion, it should be remembered that, even though the three policies differ greatly, the time required from design through contract to construction of a new naval ship (often 10 to 15 years) prevents one from categorizing a particular ship project as the result of strictly one acquisition policy. It is possible, however, with this understanding, to associate a ship project with the major elements of the policies as in Table 3.

A. Conventional policy

At the end of World War II, the Navy had 5,000 ships. and about 57 shipyards were working at or near capacity. Since, both the Navy and the shipbuilding base have continued to shrink. Much of the fleet was retired from

Table 2-- General Characteristics of Navy Acquisition Policies

Acquisition Policy	Characteristics of Design Process	Cost Consciousness	Contract Type
Conventional: (pre-1960s)	in house non rigorous little documentation and design control	relatively unconstrained performance optimized	multiple shipbuilding multi-year allocated to many shipyards
CF/CP: (1963-1969)	out of house (industry controlled) rigorous (systems engineering) extensive documentation (Navy review teams)	minimize life cycle cost cost effectiveness optimized	total package procurement multi-year multiple shipbuilding single shipyard fixed priced
Present: (post 1970)	in house (industry participation) rigorous extensive documentation and design control	minimize acquisition cost (design to cost) cost optimized fly-before-buy	separate development and production contracts multiple shipyards varied forms multiple shipbuilding multi-year

Table 3-- Ships Developed Under the Navy's Acquisition Policies*

Acquisition Policy	Typical Ship Programs	Shipyards
Conventional	DE-1052 (46 ships)	Todd-Seattle, Todd-San Pedro, Avondale, Lockheed
	DE-1040 (10)	Bethlehem Steel-San Francisco Avondale, Defoe, Lockheed
	LST-1179 (20)	Philadelphia Naval Shipyard, NASSCO
	CVAN-68 (3)	Newport News
	SSN-637 (37)	Electric Boat, Quincy, Ingalls, Portsmouth Naval Shipyard, Mare Island Naval Shipyard, Newport News
	SSN-688 (26)	Electric Boat, Newport News
CF/CE	Fast Deployment Logistics Ship (FDL)	Cancelled after Litton chosen
	LHA-1 (5)	Litton
	DD-963 (30)	Litton
	DLGN-38 (4)	Newport News
Present	Guided Missile Patrol Frigate (FFG-7)	Bath, Todd-San Pedro, Todd-Seattle
	Sea Control Ship	Not Awarded
	AEGIS Guided Missile Destroyer	Cancelled

* Adapted from Naval Ship Design courses at the Massachusetts Institute of Technology

active service, but later reactivated for the Korean conflict; consequently, there was no major naval shipbuilding program undertaken until about 1952.

The "conventional" policy was characterized by an iterative design process accomplished by the Navy "in-house" or by an independent design agent, little documentation, major emphasis on ship performance, splitting of production contracts between several shipbuilders, and little involvement by the Office of the Secretary of Defense. The acquisition process was basically decentralized to the service level. In this period the Navy followed a general policy of maintaining as large a shipbuilding base as possible within budgetary constraints. The major impact of this "conventional" policy was the allocation of new shipbuilding contracts among the Navy's primary warship builders (Todd, Bath, Bethlehem Steel, New York Shipbuilding, Newport News, Electric Boat, Ingalls, Puget Sound Drydock, National Steel, etc.) in order to achieve a balanced distribution of the production. Additionally, some new construction was performed in Naval shipyards (Portsmouth and Mare Island for submarines, and Philadelphia, Puget Sound, and New York for surface ships). It is interesting to note that it was during this period that MarAd exercised its authority through preferential shipbuilding provisions of the Merchant Marine Act of 1936 and allocated ship construction contracts to two

shipyards in order to correct West Coast deficiencies. No such allocation has occurred since. Ships developed under the "conventional" policy and their major producers are shown in Table 3.

B. Concept formulation/contract definition policy (CF/CD)

In the early 1960s Defense Secretary McNamara initiated major changes in the Naval ship acquisition policies through implementation of concept formulation and contract definition, leading eventually to total-package procurement. The previous policy of allocation was laid aside in favor of establishing the policy of formally-advertised fixed-price bidding procedures for Navy ship procurements. Only minimal attention was given to the concept of a broad shipbuilding base being required for mobilization purposes.

The radically different acquisition policy featured centralized major decisionmaking authority to the Office of the Secretary of Defense. The objectives of the new program were [8]:

1. optimization of cost effectiveness by using systems analysis techniques;
2. reduction or elimination of contractor claims against the government by using contractor-prepared performance-oriented specifications instead of government-imposed detailed specifications;

3. reduction of cost overruns by transferring financial risk to the contractors for the design and acquisition phases through the use of fixed-price contracts;
4. significant capitalization increases in shipbuilding facilities by using multi-ship, multi-year contract awards to a single shipbuilder that were expected to provide long-term financial security; thus enabling large-scale capitalization and forcing expansion of facilities due to delivery schedule demands;
5. reduction of unique system and subsystem proliferation resulting from split production contracts;
6. introduction of producability and innovation into the designs by having the production contractor design the system he will produce;
7. lower acquisition costs by taking advantage of the "Learning Curve" effect through single-producer, serial productions; and
8. arrival at more accurate total cost estimates and reduction of poor ship support by making the contractor responsible for all on-board systems, crew training, initial repair parts and support facilities similar to "Total-Package" procurement.

Under the CF/CD process, concept formulation remained primarily a Navy in-house activity. It was the phase for determining the requirements a ship would have to satisfy and which of the requirements could be satisfied by existing weapons systems or by new R&D projects. The contract definition phase, however, provided the greatest departure from the "conventional" policy. Where, in the past, ship designs had been developed by the Navy in-house and then negotiated with several shipbuilders for construction, contract definition called for the Navy to issue Requests for Proposals to selected capable shipbuilders, the successful bidders of which (usually two or three) were then paid to produce ship designs. The construction contract was then awarded to the single shipbuilder with the "best" design. ("Best" was primarily the most cost-effective, i.e. the most performance per life-cycle cost dollar coupled with the production schedule.) The single contract thus awarded was for multi-year, multi-ship, fixed-price production, with or without incentive clauses. Ships developed under the CF/CD policy, and their major producers, are shown in Table 3.

This Navy CF/CD policy was an adaptation of the Total-Package Procurement program in use throughout the Department of Defense for all weapon systems acquisition, and both developed severe difficulties. By the late

1960s, cost and schedule overruns and performance shortfalls of new major weapons systems were daily newspaper fare. In 1971 the Assistant Secretary of Defense for Financial Management (comptroller) conducted a survey of 35 major development and production programs, finding only two of which to be on, or ahead of schedule [18]. The same year GAO made a survey of 61 weapon systems and found the cost estimates for them had increased \$33.4 billion over the initial estimate [18]. The first LHA is yet to be delivered and is several years behind original schedule and millions of dollars over estimate. Contractor costs soared, profits plummeted, and claims against the government mounted. The term "contractor bailout" became prevalent as one producer after another threatened to cease production unless relief from the fixed-price contracts was provided.

For the Navy and the Naval shipbuilder, several major drawbacks developed in the CF/CD policy. Large amounts of money, time, and personnel were required of the government and the shipbuilder in generating and evaluating the competing ship design proposals. A significant problem was the impact on shipbuilders who, after submitting their proposal, had to be cautious when competing for other business while waiting for the contract award. This, and the significant cost and uncertainty involved in employing a large design team to

prepare a proposal, caused some shipbuilders to withdraw from competing for Navy shipbuilding [67, p. 1-17]. Further, the cost savings envisioned from more efficient series production are not materializing. Inflation has been a major contributor to the cost growth of recent contracts, and this has been compounded by the inflation effects in wages and material of the myriad subcontractors involved. The result has been to only further narrow the already limited shipbuilding base available for major naval shipbuilding and to create an intense adversary relationship between the Navy, Congress, and the shipbuilder, the effect of which will be felt in Naval shipbuilding for years to come.

In May of 1970, Deputy Secretary of Defense Packard announced that the Total Package Procurement policy was to be replaced by a new policy soon to be established. It is yet too early to evaluate the final results of the LHA and DD-963 projects, so whether or not the long-term objectives of the CF/CD Total Package Procurement policy will be achieved for the Navy remains to be seen. It is a fact, however, that the sole-source, multi-year contract programs directly resulted in the construction of a new shipyard by Litton at Pascagoula, Mississippi.

C. Present policy

The Navy ship acquisition policy now in effect strives to combine the best features of the "conventional" policy with the lessons learned from the CF/CD experience. At this time, the major project concerned is the Guided Missile Patrol Frigate (FPG) program. Major elements and trends of this new policy include:

1. in-house ship design aided by some private contractor involvement (from "conventional" plus CF/CD);
2. rigorous, systematic approach with required review and approval to proceed through the major acquisition stages (from CF/CD);
3. no Total Package approach in that the design and production phases are rigidly separate (from "conventional");
4. formal documentation (from CF/CD);
5. improvement of the quality and validity of cost estimates;
6. flexibility in contract type and liberalization of escalation and inflation clause usage;
7. tailoring of acquisition approach to the needs of each project;
8. emphasis on constrained design through the "Design to Cost" approach; and

9. emphasis on proven design and equipment through a "fly-before-you-buy" approach.

The last of these policy elements are the most distinctive of the present approach. The "Design-to-Cost" method was revolutionary to the Navy, but fairly commonplace in private industry new-product development. The method will be used for non-nuclear ship acquisition and involves a period of identification and study of alternative designs which are technically feasible for satisfying the need requirement and estimation of their gross characteristics using ship synthesis and engineering analysis techniques. After this, design constraints are established by Navy top management. In the FFG project these initial design constraints concerned the acquisition cost, full-load displacement, and crew size. Performance capability above the minimum specified must then be traded off to stay within the design constraints. Discrete cost elements (i.e. g unit production cost, operating and support costs) are then translated into "design to" requirements. Design baseline cost goals are rigidly reviewed throughout the design phases.

The key element which has grown from recognition of the need for increased test and evaluation during the acquisition process has been prototyping or "fly-before-you buy." Total prototyping of major naval vessels is not

feasible, however, due to the time and expense involved; consequently, a modified approach has been used. This involves early construction of land-based test sites to evaluate entire systems such as the propulsion and combat systems, and allowance of adequate time between the various design and production phases to permit realization of the design test and evaluation prerequisites.

The actual acquisition process has been exemplified by the FFG program. In that program, two cost-plus-fixed-fee (CPFF) contracts were awarded for private shipbuilders to aid the Navy in ship system design. This mutual assistance should benefit both the Navy and the shipbuilders through more producible designs and reduced misunderstanding. One shipyard, in this case Bath Iron Works, was then selected to build the "lead" ship (the first ship to be built). Separate lead-ship construction is begun well in advance of follow-ship construction in order to validate the design of the lead ship. After construction has been underway for some time, follow-ship shipbuilders are selected on a competitive basis with fixed-price incentive (FPI) multi-year contracts to be awarded to a predetermined number of builders. Three FFG follow-shipbuilding yards were desired by the Navy and just recently (May 1976) Bath Iron Works, Todd-Seattle, and Todd-San Pedro were chosen.

D. Summary

Three distinct acquisition policies are discernable from the past two decades, each having differing characteristics, and each having differing impact upon the shipbuilding industry. The "conventional" policy (pre-1960s) emphasized maintenance of a broad industrial base for Naval shipbuilding through allocation of shipbuilding contracts. Numerous shipyards, generally ten or more, both military and private, were involved in work from this period. The CF/CD policy (1962-1969) did not stress such a broad shipbuilding base, but rather emphasized a total package approach. Contracts were awarded on the basis of competitive bidding. Only a narrow production base was required; consequently, only a few shipyards, none military, were involved. In fact, all three of the new contracts awarded for non-nuclear shipbuilding under CF/CD were awarded to one shipyard--Litton. The fact that only six shipyards have been actively engaged in naval shipbuilding since 1972 is a result primarily of the CF/CD policy. Also, the animosity which has come largely from the results of the CF/CD building programs has created an adversary relationship between government and private shipbuilders. The most significant manifestations of this relationship have been in the negotiations for settlement of the multi-million

dollar claims and the few bidders on very recent building contracts. The present policy seeks to learn from the lessons of the past. It appears that there is concern for maintenance of a wider production base and more appropriate contract terms for the builder, but the most pressing challenge facing the Naval shipbuilding policies is resolution of the government-contractor conflict.

CHAPTER 4

THE CHARACTER OF U.S. SHIPBUILDING

The previous two chapters have discussed the historical perspective of, and government role in, the U.S. shipbuilding industry. Taken together, they show the evolution of the industry through the guiding hand of government. However, neither the industry nor the market which it supplies have developed in a vacuum solely dependent on themselves. They are but one segment of the overall world market and, as will be observed, only a small segment at that. The U.S. shipbuilding market can be characterized as a complex interaction of government and private enterprise with unstable demand in an environment of large multinational corporations. Therefore, the character of the U.S. shipbuilding industry must be examined in a macro-sense in relation to its world environment and in a micro-sense in relation to the elements among which it is distributed.

4.1 In Relation to World Shipbuilding

Tables 4 and 5 present the shares of ships delivered and new shipbuilding orders placed in the major world shipbuilding nations. From these it is apparent that the United States shipbuilding industry has not been a

Table 4-- Share of Oceangoing Merchant Ships (over 1000 gross tons) Delivered
By The Principal World Shipbuilding Countries, 1962-1975*

	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962
Japan	52.6	51.5		51.3	48.5	50.0	55.1	54.0	49.9	47.5	43.0	29.9	26.5	23.9
Sweden	7.1	8.5		8.3	8.3	9.7	7.1	8.0	9.9	10.8	11.5	12.4	9.8	10.7
Spain	4.7	4.6		4.3	3.4	3.7	2.2	2.7	2.2	1.0	1.8	#	#	#
United Kingdom	3.6	4.1	Not Separately Reported	4.2	5.2	5.3	5.1	7.5	6.5	8.2	9.2	10.2	12.6	15.1
West Germany	6.5	6.2		4.0	7.6	6.3	7.3	5.4	7.7	8.1	8.2	9.9	11.5	10.1
Denmark	3.4	2.8		3.8	3.3	2.2	3.5	2.9	3.1	3.0	2.2	#	#	#
Italy	2.9	2.9		3.8	3.2	2.4	2.4	2.5	3.8	2.8	2.9	5.9	#	#
France	3.3	3.5		3.7	4.6	3.9	3.1	3.3	3.0	3.5	4.7	6.0	6.6	5.0
Norway	2.6	3.4		3.2	3.7	3.3	3.4	3.5	4.1	2.6	3.6	#	#	#
Netherlands	2.4	2.7		2.8	2.4	3.0	#	1.7	1.7	1.6	#	2.9	5.7	6.3
Yugoslavia	2.4	2.0		2.5	1.7	1.8	1.8	1.4	1.9	2.1	#	#	#	#
Poland	1.2	1.0		1.5	1.3	1.2	1.3	1.2	1.3	1.5	#	#	#	#
UNITED STATES	2.0	1.8		1.4	1.6	1.7	2.1	1.0	0.8	0.9	2.8	2.6	4.1	5.5
U.S.S.R.	0.5	0.9		0.8	1.2	1.1	1.6	1.0	1.8	3.3	2.5	#	#	#
Rest of World	4.8	4.1		4.6	3.9	3.9	4.4	4.1	2.9	3.2	7.5	20.1	23.2	23.3
Total Tonnage (millions)	59.5	54.6		44.4	39.8	35.2	26.4	24.9	19.6	16.7	14.9	12.7	11.6	9.8

* percent of deadweight tons delivered

** calendar years-- others are fiscal years

not separately reported

source: Maritime Administration

Table 5-- Percentage of Orders Placed in the Principal Shipbuilding Countries.

	1969	1970	1971	1972	1973	1974	1975
Japan	42.4	44.2	54.1	63.0	48.6	38.4	49.2
Brazil	--	0.2	2.3	0.8	1.1	5.4	7.0
Poland	0.5	0.4	1.9	1.8	1.0	2.1	5.8
West Germany	7.0	5.7	4.0	2.5	7.1	8.9	5.2
United States	1.4	1.4	2.2	4.1	2.5	7.8	4.9
South Korea	--	--	--	--	1.3	2.8	3.7
Spain	5.9	6.8	4.8	2.7	5.6	2.5	3.3
Denmark	4.0	4.2	2.7	1.0	0.9	3.6	2.8
France	6.1	3.6	4.3	1.9	2.4	8.4	2.3
India	--	--	0.4	0.1	--	--	1.9
Norway	3.3	4.6	4.3	1.3	3.1	1.5	1.9
Yugoslavia	4.1	1.4	0.3	0.6	1.3	1.3	1.7
Italy	3.2	2.8	1.8	1.8	3.3	1.7	1.3
Canada	--	--	0.9	0.2	0.5	1.4	1.0
Finland	--	0.7	0.5	0.5	0.9	1.7	0.8
Belgium	--	--	0.5	--	0.6	0.8	0.8
Sweden	7.4	6.7	3.6	10.8	7.5	4.4	0.6
U.K.	7.3	4.9	4.0	2.3	5.9	1.6	0.6
Netherlands	2.5	5.4	1.6	0.6	1.8	1.7	0.5
Rest of World	4.9	7.4	5.8	4.0	4.6	4.0	4.7
Total Gross Tons (millions)	30.0	41.0	29.6	30.4	73.6	28.4	13.8
U.S. Rank	12	11	11	3	8	4	5

source: Lloyd's Register of Shipping

major competitor in the world market, producing less than 3% of the world's delivered tonnage in 1974 and 1975. Since the early 1960s, the world production has been dominated by Japan, which controls approximately one-half of the tonnage output. Four interesting features of the world shipbuilding market are brought out by the tables. First is the clear and unchallenged domination of the world market by the Japanese. Second is the recent emergence of new shipbuilding centers, especially Brazil. Third is the drastic decrease in annual ordered merchant tonnage from more than 73 million tons in 1973 to less than 14 million tons in 1975, an 81% decrease in just two years. This would be due primarily to the combined effects of the tanker ordering frenzy of 1972 and 1973 and the oil embargo with the subsequent skyrocketing oil prices, which have resulted in an extreme excess in tanker capacity worldwide. Fourth is the low world position of United States shipbuilding. As stated earlier, the U.S. industry has not been, nor is it now, a major competitor in the world merchant shipbuilding market. This is affirmed in the tables, for even though triple the level of 1970, the 1975 U.S. share of the world orders was less than 5%. It is also interesting to note the rise in the U.S. rank in new orders from eleventh to fifth since 1970, with a high point of third in 1972, while maintaining such a small share of the market. This is likely to be the result of

the dilution effect as new shipbuilding centers such as Brazil emerge, and the enormous building capacity of the modern Japanese shipyards which enables them to retain their huge share of the market.

It is true that the U.S. shipbuilding industry provides only a small share of the world market, but this fact must be modified on two counts. First, the United States is effectively not an active competitor in the world merchant shipbuilding market. Its production is generally limited to naval vessels or merchant vessels whose U.S. construction is required by federal legislation. The nature of the American market is therefore very different from that of other principal shipbuilding countries. As shown in Figure 4-1, the United States is the only principal shipbuilding nation that not only builds all of its own flag fleet vessels (Figure A), but also builds only ships intended for its flag fleet (Figure B). In this regard, the U.S. market is a closed system. These conditions can be attributed to higher U.S. shipbuilding costs, requirements of federal statutes for American construction of all U.S. flag vessels, and requirements for federal direct and indirect aids.

Secondly, the Navy is the largest single customer of the U.S. shipbuilding industry, as will be discussed. Therefore, naval shipbuilding has a great impact upon the overall nature of the industry. Considering only naval

Figure 4.1-- Total World Orderbook of Merchant Vessels, 1975

by country of build at 31 December 1975

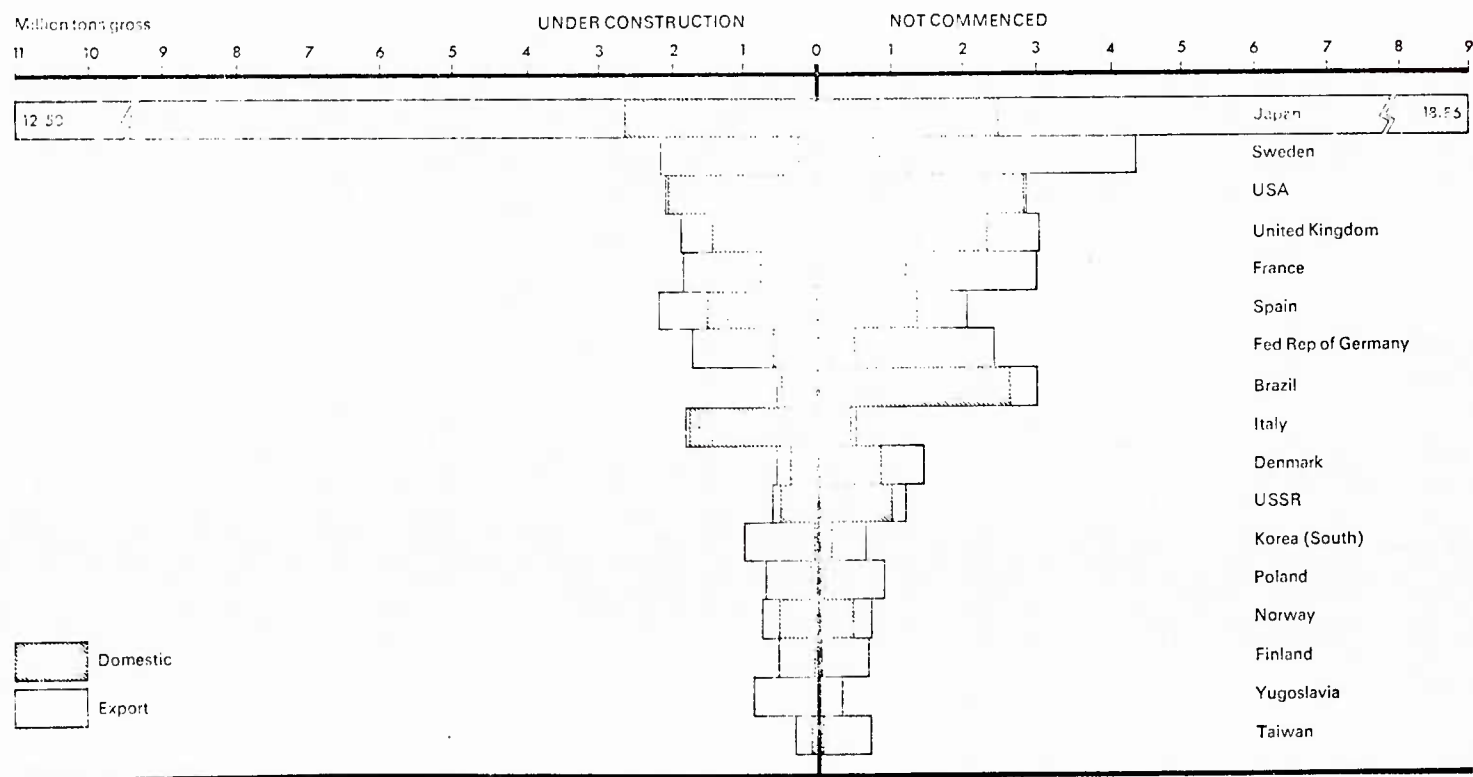
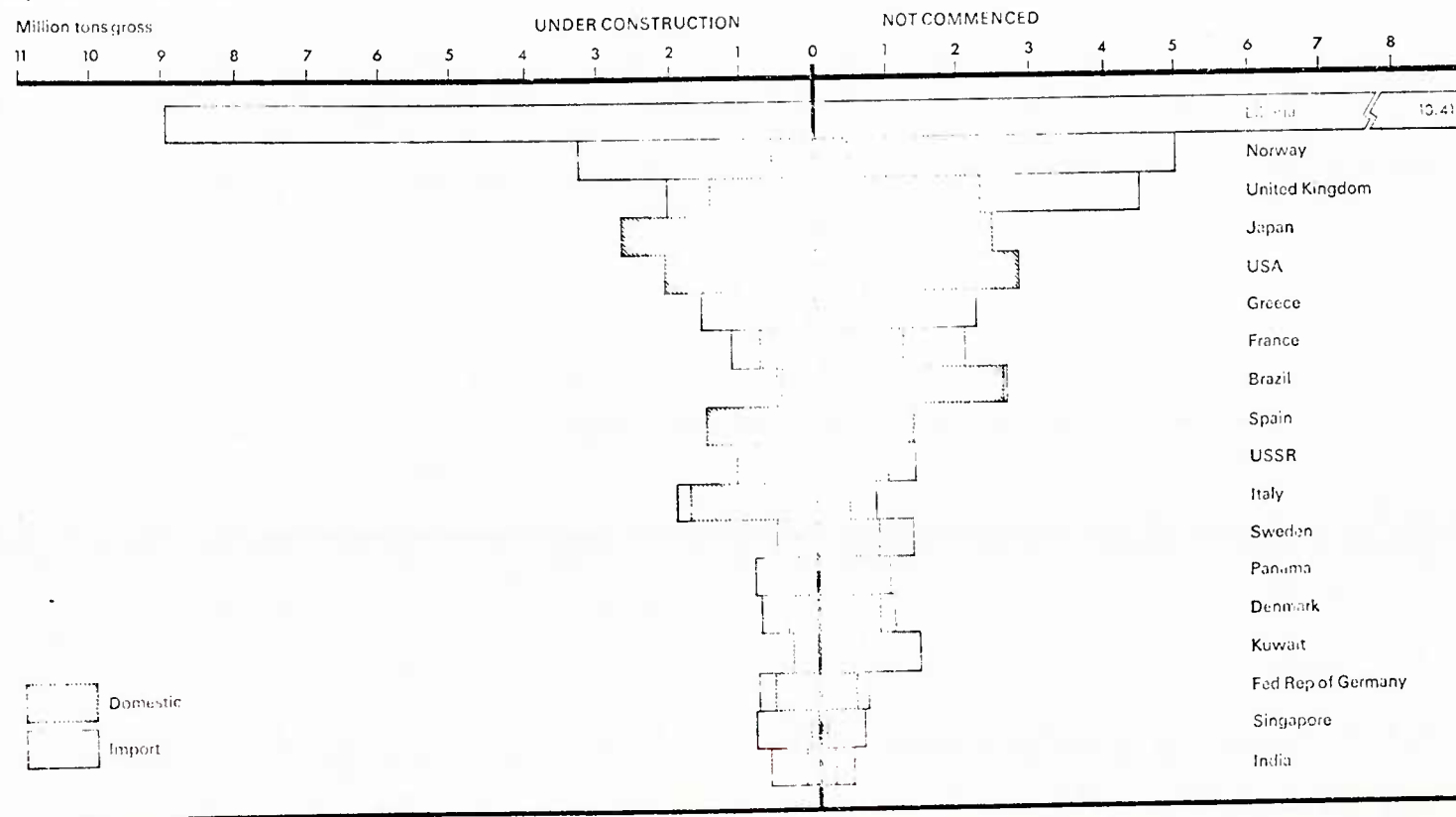


Figure 4.1-- Continued

by intended flag of registration at 31 December 1975



vessels, the United States and the U.S.S.R., which have by far the world's largest oceangoing naval fleets, are clear leaders in ship production, not only in numbers and tonnage, but also in technology. Therefore, even though the U.S. shipbuilding industry is not a major factor in world merchant shipbuilding, by considering total shipyard employment and shipbuilding facilities and the technology of the ships for both naval as well as merchant shipbuilding, the United States ranks with Japan and the U.S.S.R. as one of the top three shipbuilding nations [53, p. 49].

4.2 In Relation to U.S. Market Distribution

The U.S. shipbuilding market is essentially a closed system. Vessels of the U.S. merchant flag fleet must be U.S.-built by federal statute, and international markets have been closed to American shipyards because of their higher costs, although this situation is softening somewhat due to world economic pressures which have tended to reduce the cost gap. Thus, the United States market operates essentially independent of the rest of the world.

The U.S. market has many facets to its distribution. It can be divided into two market sectors--naval shipbuilding and merchant shipbuilding. Many shipbuilding firms produce on demand for this market naval and merchant ships of widely varying types and sizes, the composition of which has changed greatly over past years. The distribution of

U.S. shipbuilding among these areas will be explored in this section.

A. By major private U.S. shipbuilders

As noted previously, the number of active producers of merchant and naval vessels has declined drastically from the level after World War II. Today there are approximately twenty-five private shipyards capable of constructing oceangoing merchant or naval vessels; however, of these, only six remain active in naval shipbuilding and thirteen in merchant shipbuilding as of 1 January 1976. The balance of the yards are engaged in construction of smaller vessels, offshore drilling rigs, and ship repair. Also, naval shipyards are no longer engaged in new construction. Figure 4-2 shows the number of private shipyards actively engaged in shipbuilding over the past two decades. Table 6 below lists the major participants in the construction of oceangoing merchant and naval vessels, and their active market sector since 1974. Figure 4-3 shows the geographical location, and Table 7 presents a brief sketch of the construction capabilities for each of these major U.S. shipyards.

Tables 8 and 9 show the share of the merchant and naval shipbuilding market sectors for each major private shipyard during the past decade. It is clear from Table 8 that no single shipbuilder dominates U.S. merchant

Figure 4.2-- Number of Major Private Shipyards Engaged in Merchant and Naval Shipbuilding (Vessels over 1000 DWT) on 1 January 1955-1976.

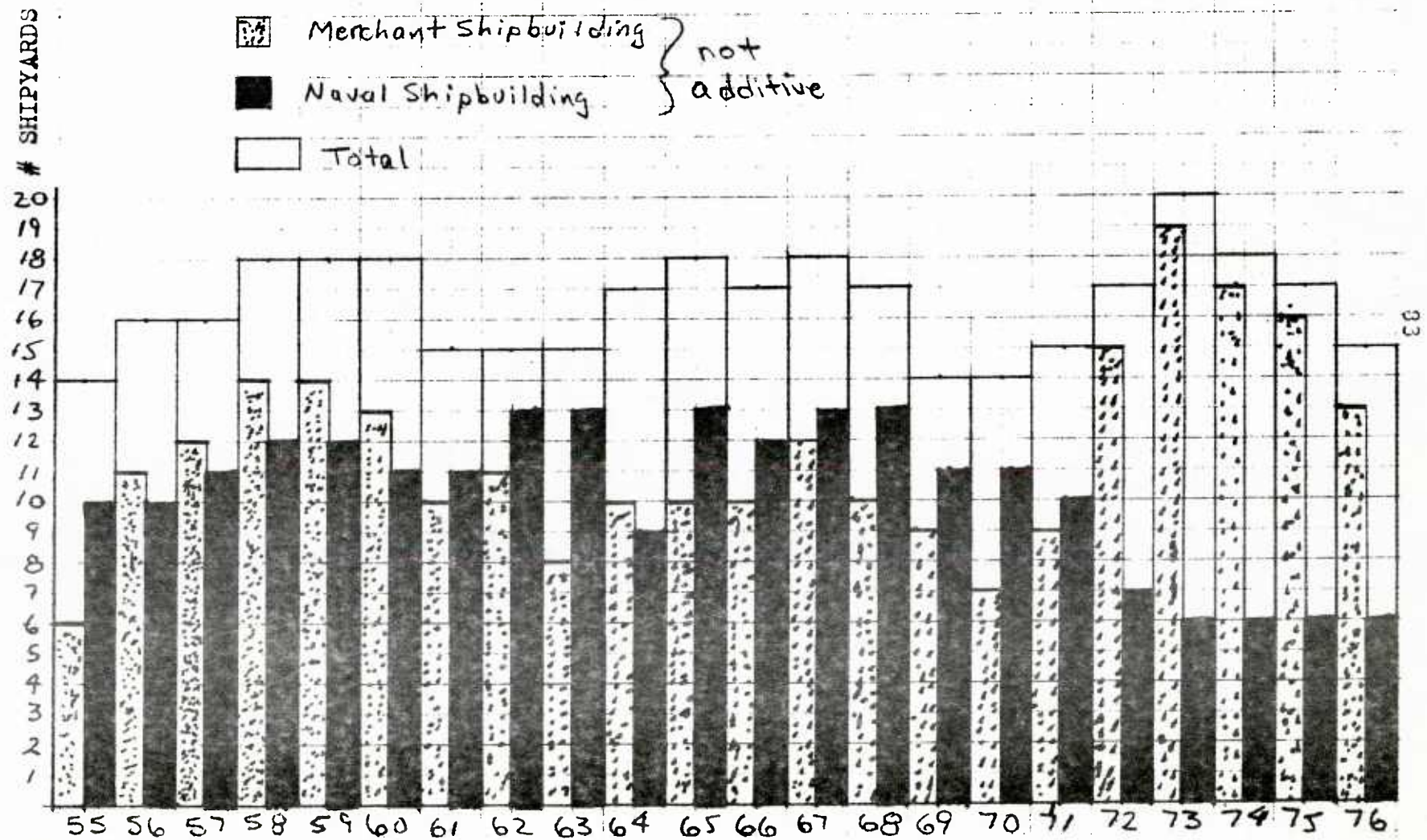


Figure 4.3-- Geographical Location of The Major U.S. Shipyards



Shipyards:

1. Bath Iron Works-- (Cingoleum Corp.)
2. Quincy Shipbuilding Division-- (General Dynamics Corp.)
3. Electric Boat Division-- (General Dynamics Corp.,)
4. Seatrain Shipyard-- (Seatrain Lines Inc.)
5. Sun Shipbuilding & Drydock Co.-- (Sun Oil Co.)
6. Sparrows Point Shipyard-- (Bethlehem Steel Co.)
7. Newport News Shipbuilding & Drydock Co.-- (Tenneco Inc.)
8. Ingalls Shipyard-- (Litton Industries)
9. Avondale Shipyards-- (Ogden Corp.)
10. National Steel & Shipbuilding Co.--(Kaiser Industries)
11. Todd Shipyard- San Pedro
12. Todd Shipyard- Seattle
13. Lockheed Shipbuilding & Construction-- (Lockheed Aircraft)
14. FMC Shipyard-- (FMC Corp.)

Table 6

Major Private U.S. Shipbuilders

Shipbuilder	Merchant	Naval
National Steel & Shipbuilding (NASSCO)	X	X
Avondale Shipyard	X	
Newport News Shipbuilding & Drydock Co.	X	X
Bethlehem Steel-Sparrows Point Shipyard	X	
Seatrain Shipyard	X	
General Dynamics-Quincy Shipyard	X	
Sun Shipbuilding & Drydock Co.	X	
FMC Shipyards	X	
Todd Shipyards-San Pedro and Seattle	X	
Litton Shipyards		X
Bath Iron Works	X	X
Lockheed Shipbuilding and Construction Co.		X
General Dynamics-Electric Boat Division		X

shipbuilding. Avondale and Bethlehem Steel-Sparrows Point shipyards have been leaders in the industry over this period, at one point, accounting for nearly two-thirds of the industry backlog. In recent years NASSCO and Newport News have risen to join Avondale and Bethlehem-Sparrows Point as the top four shipyards, processing over 70% of the industry backlog at the beginning of 1976.

While the number of producers for both the merchant and naval shipbuilding markets have been decreasing over

Table 7-- Construction Capabilities, Facilities and Current
Employment of the Major U.S. Shipyards

Avondale Shipyards, Inc.

Construction Capability: Ships up to 1,200 feet in length. Has built merchant vessels of all types, Navy destroyers, Coast Guard cutters and large drill rigs.

Facilities: In one building way, two vessels up to 960 feet by 176 feet can be constructed simultaneously. In the other shipway, three vessels can be in different stages of construction simultaneously (or up to six vessels if total lengths of each pair do not exceed 1200 feet). The largest of Avondale's two floating drydocks can accomodate a ship 960 feet by 210 feet.

Current Employment: 6.700

Bath Iron Works Corp.

Construction Capabilities: Ships up to 700 feet in length. Experienced in construction of RO/ROs, containerships, tankers, Navy destroyers, guided missile frigates and patrol frigates.

Facilities: Three large building ways, one large floating drydock, and a steel floating partial drydock for bow sonar dome installation. In 1974, completed a \$14 million plant modernization program.

Current Employment: 3.350

Bethlehem Steel Corp.-- Sparrows Point Yard

Construction Capabilities: Ships up to 1200 feet by 192 feet. During past two decades, specialized in series constrution of standard sizes of tankers, and also freighters and container-ships. Since recent facilities expansion program, has also delivered two of a series of five 265,000 DWT VLCCs.

Facilities: A large building basin (maximum ship size 1200 feet by 192 feet) and four conventional inclined shipways.

Current Employment: 4,090

Table 7-- ContinuedFMC Corp.-- Marine and Rail Equipment Division

Construction Capability: Ships up to 700 feet by 100 feet. In 1972, the yard entered the market for large seagoing ships by signing a contract for construction of six 35,000 DWT tankers.

Facilities: One side-launching shipway (maximum ship size 700 feet by 100 feet). Drydocking and most outfitting is done in the nearby Port of Portland facility.

Current Employment: 1,930

General Dynamics Corp.--Electric Boat Division

Construction Capability: Ship up to 690 feet in length. E.B. specializes in the construction and overhaul of nuclear-powered submarines for the Navy. Current construction incompletion is in the SSN-688 Los Angeles and Trident class submarines.

Facilities: Four covered submarine building ways, two dry docks and a floating drydock are used for SSN construction. A new Land Level Construction Facility consisting of an inshore erection area, an outboard erection area, and a graving dock and pontoon facility is near completion for use in construction of the new SSN and Trident submarines. A separate steel processing facility located at Quonset Point supports the construction effort.

Current Employment: 21,600 (Groton), 4,990 (Quonset Point)

General Dynamics Corp.--Quincy Shipbuilding Division

Construction Capability: Ships up to 1,000 feet by 144 feet. From 1964 to 1973, delivered 18 ships to the Navy including two ammunition ships, four nuclear powered submarines, six replenishment oilers, two submarine tenders and four LSDs. Prior to that time Quincy had built the first nuclear powered surface ship. In 1973 ceased building Navy ships. Currently engaged in construction of barge-carrying ships and 125,000 cubic meter LNG tankers.

Facilities: Five large graving docks and all necessary supporting facilities. In 1975, the Quincy yard completed a

Table 7-- Continued

\$40 million improvement and modernization program for construction of the LNG tankers.

Current Employment: 4,370

Litton Systems, Inc.--Ingalls Shipbuilding Division

Construction Capability: Ships up to 830 feet by 170 feet. Experienced builder of cargoliners, containerships and tankers, as well as Navy combatants and auxiliaries. Nuclear submarines have also been constructed in the past.

Facilities: The East Bank yard has six conventional inclined building ways and a small graving dock. The West Bank yard is equipped for series production using modular construction methods. The launch pontoon (floating drydock) is capable of taking a ship 830 feet by 170 feet.

Current Employment: 23,490

Lockheed Shipbuilding and Construction Co.

Construction Capability: Ships up to 700 feet by 100 feet. In the past has specialized mainly in Naval vessels; however, recent construction includes RO/RO and bulk carriers in addition to Coast Guard icebreaker and submarine tenders.

Facilities: Three inclined building ways suitable for construction of large ships and three large floating drydocks.

Current Employment: 2,000

National Steel and Shipbuilding Co.

Construction Capability: Ships up to 1,000 feet by 170 feet. Experienced in building both Naval and commercial vessels, having in the 1970s completed 17 Navy LSTs, five large cargo-liners, two OBOs, four 38,300 DWT tankers and five 89,700 DWT tankers.

Facilities: One large building basin, three large inclined shipways, a small floating drydock and a large graving dock. In 1975, NASSCO completed a \$20 million expansion and modernization program.

Current Employment: 6,120

Newport News Shipbuilding and Drydock Co.

Construction Capability: All types of ships up to 1600 feet by 240 feet. A major producer of both Navy and merchant ships including passenger liners, tankers, 125,000 cubic meter LNG tankers, nuclear powered guided missile cruisers, nuclear powered submarines and all of the Navy's nuclear powered aircraft carriers.

Facilities: Four large building ways and three large graving docks presently used for ship construction. Also, three small graving docks for overhaul, conversion and repair work. In 1976, at a cost of approximately \$180 million, Newport News completed its new commercial yard centered around a new building basin 1,600 feet long, 250 feet wide and 44 feet deep.

Current Employment: 23,388

Seatrain Shipbuilding Corp.

Construction Capability: Ships up to 1,094 feet by 143 feet. Seatrain specializes in construction of large tankers and barges

Facilities: Two building basins capable of accomodating a ship 1,094 feet by 143 feet and a smaller graving dock.

Current Employment: 1,480

Sun Shipbuilding and Drydock Co.

Construction Capability: All types of ships up to 1400 feet by 195 feet. In recent years, has specialized in RO/RO trailer ships and medium size tankers of its own design. Recently has begun construction of 130,000 cubic meter LNG and 118,300 DWT tankers. Sun has not been engaged in construction of Naval ships in many years.

Facilities: Three large inclined building ways plus a new level shipbuilding platform on which two halves of a ship as large as 1400 feet by 195 feet can be constructed simultaneously or two smaller ships, 700 feet in length or less, can be built simultaneously. Sun has one floating drydock suitable for a ship 1,100 feet by 195 feet.

Current Employment: 4,060

Todd Shipyards Corp.-- Los Angeles Division

Construction Capability: Ships up to 800 feet by 84 feet. Since 1960, has built guided missile frigates and destroyer escorts for the Navy, as well as three break bulk cargo ships and four 25,000 DWT tankers.

Facilities: Two inclined shipbuilding ways (maximum ship size 800 feet by 84 feet) and two floating drydocks.

Current Employment: 2,350

Todd Shipyards Corp.-- Seattle Division

Construction Capability: Ships up to 550 feet by 96 feet. In 1952, embarked on a new construction program which included tugs, barges, ferries, dredges, pile drivers and floating cranes. In 1964, completed a series of four guided missile destroyers. In the late 1960s and early 1970s, was lead yard for construction of 26 destroyer escorts, seven of which were built in Todd--Seattle.

Facilities: One end-launch shipway (maximum ship size 550 feet by 96 feet). Also a double shipway 450 feet by 131 feet on which two ships with beams of 50 feet or less can be built simultaneously, or one ship of 60-foot beam or more. The yard has three floating drydocks.

Current Employment: 1,130

Table 8-- Market Share of the Merchant Shipbuilding Sector For Each of the
Principal U.S. Shipbuilders (% DWT Building or Contracted 1 Jan)

	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967
National Steel	21.4	9.9	23.6	8.4	5.6	--	--	--	0.3	1.0
Litton Shipyard	--	--	0.3	3.1	10.0	14.9	15.5	11.3	31.4	41.4
Beth- Sparrows Point	13.2	19.3	28.2	33.3	34.6	39.0	42.2	34.7	19.7	10.1
Todd Shipyards	1.8	7.5	4.1	6.0	0.4	--	--	--	--	--
Newport News	17.4	18.2	3.1	4.3	--	--	--	4.4	5.7	9.1
Sun Shipbuilding	3.5	3.7	2.6	2.2	8.8	18.8	14.0	10.2	6.4	13.1
Avondale	17.6	16.7	8.6	9.8	14.8	11.7	20.8	28.7	33.0	13.1
Bath Iron Works	0.8	2.0	3.3	5.2	1.7	2.1	--	1.6	2.4	3.9
G.D.- Quincy	6.5	8.0	8.7	5.8	2.8	3.4	3.8	4.0	--	--
Lockheed	--	--	0.1	0.8	1.0	--	--	--	--	1.3
FMC Shipyard	2.7	2.8	2.9	--	--	--	--	--	--	--
Seatrain	8.0	9.0	11.1	14.9	15.7	9.5	--	--	--	--
Others	7.1	2.9	3.4	6.2	4.6	0.6	3.7	5.1	1.1	7.0

Table 9-- Market Share of the Naval Shipbuilding Sector For Each of the
Principal U.S. Shipbuilders (% DWT Building or Contracted 1 Jan)

	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967
National Steel	6.3	4.6	4.9	4.7	3.8	7.8	12.2	12.9	12.2	8.3
Litton Shipyards	44.6	38.8	42.2	41.1	41.8	24.4	19.1	11.2	3.0	5.4
Beth- Sparrows Point	--	--	--	--	--	1.7	3.3	2.7	2.1	2.6
Todd Shipyards	--	--	--	--	--	1.7	3.5	4.0	3.5	3.9
Newport News	23.4	32.3	35.4	34.0	30.6	23.5	11.9	15.4	19.0	15.2
Sun Shipbuilding	--	--	--	--	--	--	--	--	--	--
Avondale	--	--	0.5	3.4	7.0	8.7	10.0	9.1	10.1	18.4
Bath Iron Works	0.4	0.4	0.5	--	--	--	0.3	1.7	0.7	2.0
G.D.-- Quincy	--	--	--	8.0	7.5	15.4	19.2	21.0	23.4	12.8
Lockheed	7.4	8.4	--	1.2	2.3	4.1	7.8	7.3	8.0	8.3
FMC Shipyard	--	--	--	--	--	--	--	--	--	--
Seatrain	--	--	--	--	--	--	--	--	--	--
G.D.-- Electric Boat Div.	17.8	15.5	16.5	7.0	6.0	4.5	3.4	5.0	4.0	6.4
Naval Shipyards	--	--	--	0.6	1.1	8.1	9.4	9.7	13.7	16.2
Others	--	--	--	--	--	--	--	--	0.2	0.5

the past few years, naval shipbuilding has become more concentrated, in contrast to the opposite situation of the 1960s (see Figure 4-2). As of January 1976, there are only six active producers of major naval vessels; however, the market sector has clearly been dominated for some years by two firms, Litton and Newport News, accounting for over 70% of the market backlog since 1971. In very recent years, General Dynamics-Electric Boat Division has also come to the forefront due to the new and larger Trident missile submarine building program (it should be pointed out that Electric Boat builds only submarines). The huge share for Litton represents the large DD-963 and LHA Navy contracts. That for Newport News represents the large nuclear shipbuilding program of the Navy. Naval shipyards have ceased to be a market factor in new construction since 1972.

It should be noted here that the change in the number of shipyards active in each market sector is the result of very different factors. Merchant shipbuilding is responsive primarily to world and national economic factors and government subsidy policies. The large rise in the number of merchant shipbuilders after 1970 may be the result of the Merchant Marine Act of 1970, which authorized a broadened subsidy program, and economic pressures demanding additional energy fuel-carrying capacity. Since 1973 the market has contracted due largely to the oil embargo and

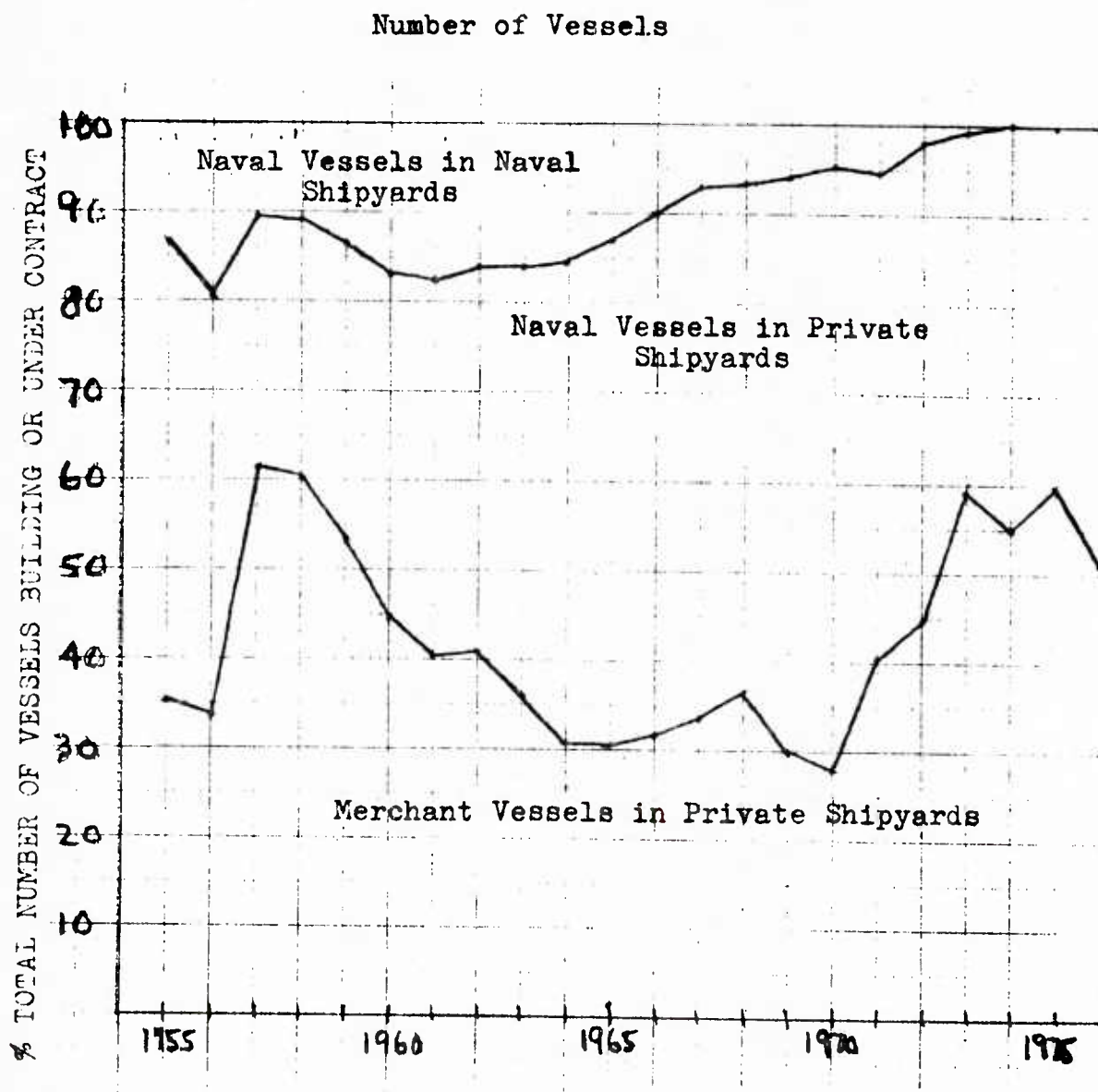
consequent overcapacity in tankers. In contrast, the motive forces for the naval shipbuilding market are the procurement policies of the Department of Defense and the mood of Congress. The reduction in the number of active naval shipbuilders has primarily been the result of Defense Department Total Package Procurement policies, discussed previously, and the greater emphasis on nuclear shipbuilding. Producers for both market sectors are greatly affected by the severely fluctuating demand resulting from the above factors.

In general, it should be observed that three shipyards--Seatrain, FMC and Sun Shipbuilding--have not engaged in naval shipbuilding over the past decade (Seatrain [1970] and FMC [1973] are new to the shipbuilding market), and that Electric Boat builds only for the naval sector. Electric Boat and Newport News account for all of the nuclear submarine shipbuilding and Newport News monopolizes nuclear surface shipbuilding.

B. By market sector

The distribution of the overall U.S. shipbuilding activity into merchant and naval shipbuilding can be explored using three parameters--number of vessels, tonnage of vessels, and value of vessels. Figure 4-4 shows the number share of the backlog of major merchant and naval vessels over the past two decades. This shows a variation

Figure 4.4-- Share of Merchant and Naval Vessels (over 1000
DWT) Building or Under Contract on 1 January
1955-1976

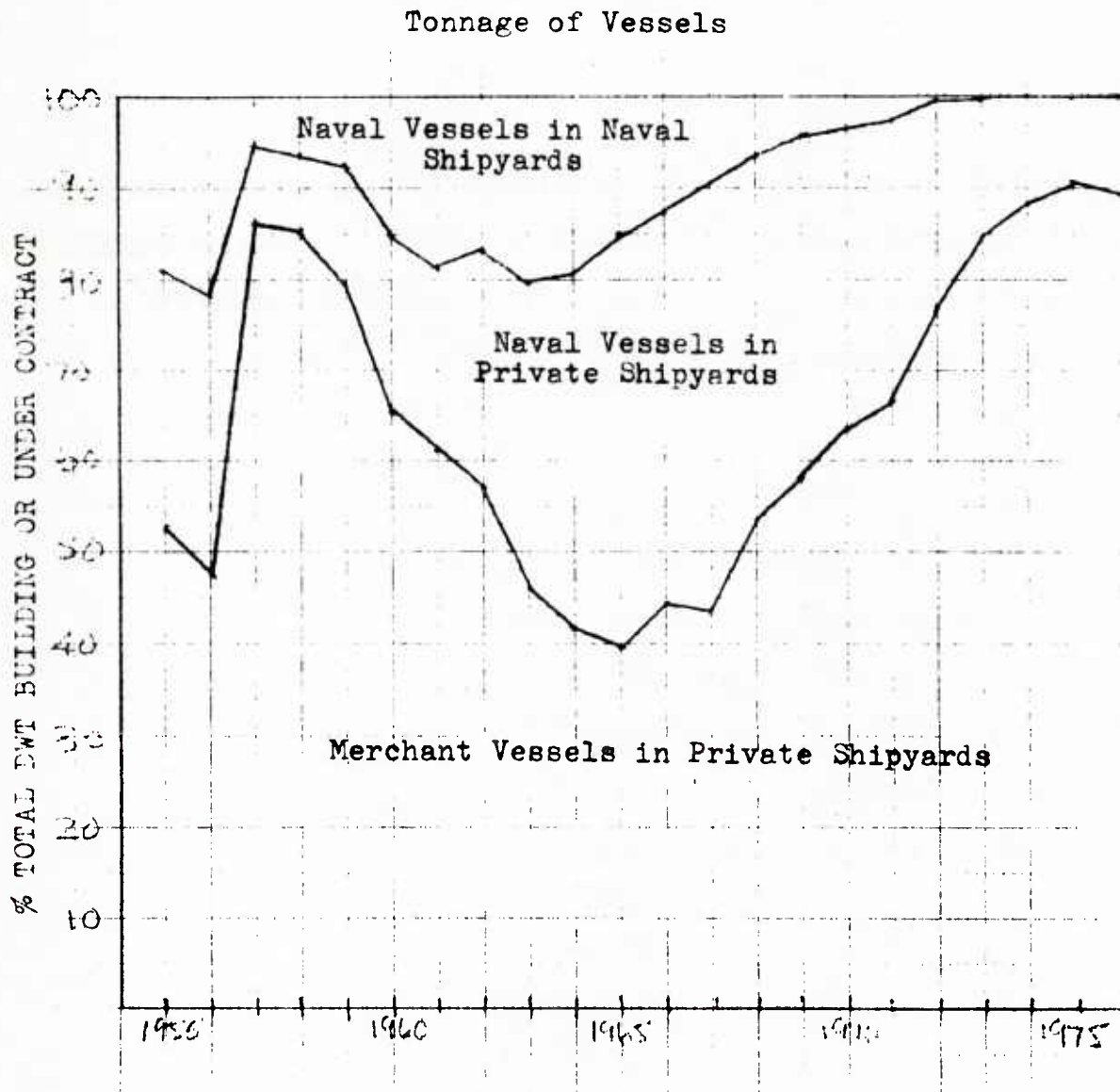


source: Shipbuilders Council of
America

in the number share of merchant vessels from 28% to 61%, with approximately equal numbers of merchant and naval ships building or on order in January 1976. Figure 4-5 shows the tonnage share of major merchant and naval vessels building or on order for the past twenty years, and indicates a rise from the low of 40% to a present level of 90% of the overall backlog tonnage in merchant vessels. The actual number and tonnage of vessels building or on order for the past two decades is shown in Figure 4-6. All of these would indicate that, by size and number indices, merchant shipbuilding predominates the market.

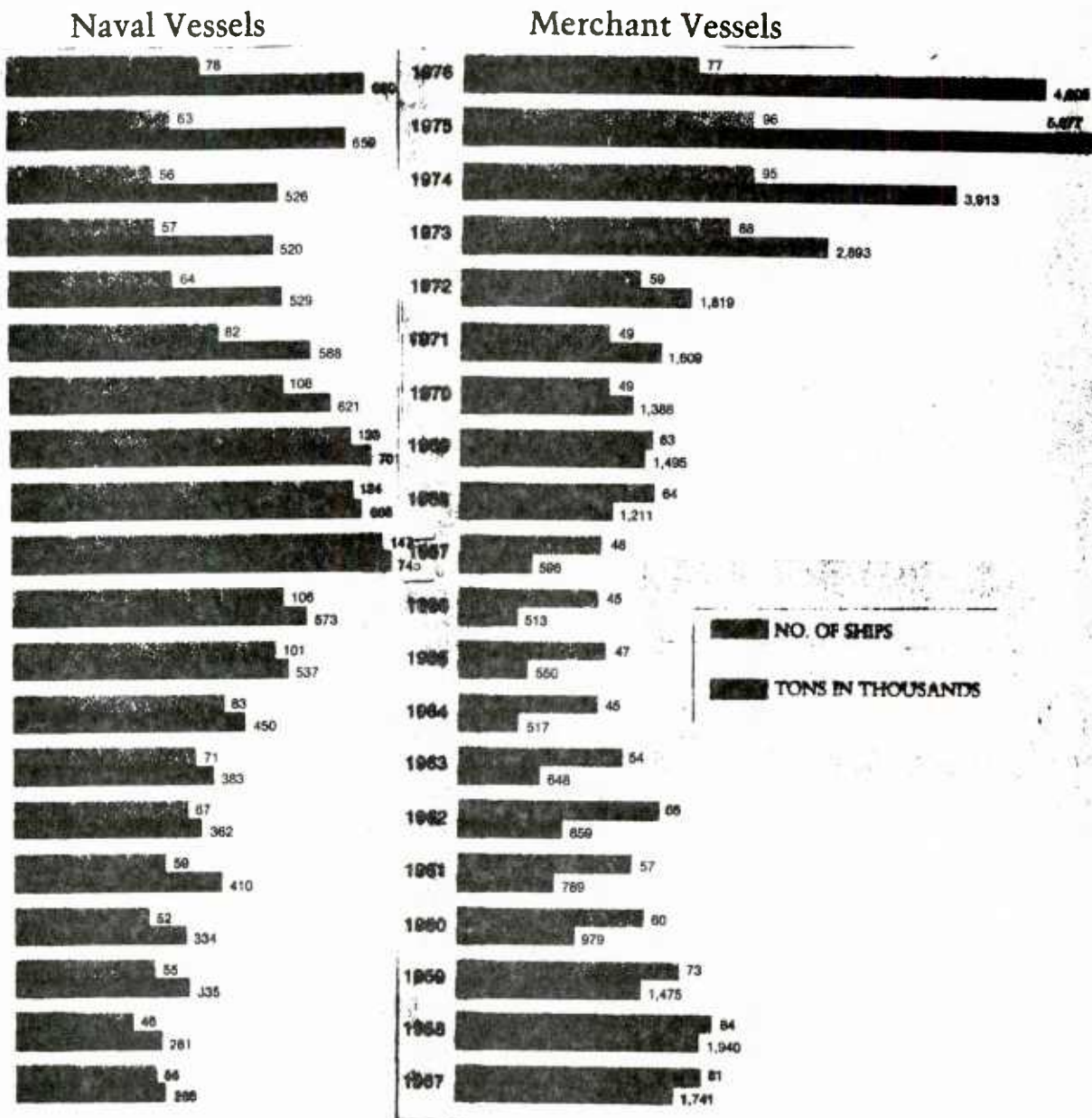
The conclusion to be drawn of the relative shares of naval and merchant vessels is entirely different when measured by value rather than size or number. Figure 4-7 and Table 10 present the value of unfinished shipbuilding work and the value of work done, respectively. It is clear from these that naval shipbuilding accounts for approximately two-thirds of the overall shipbuilding market value. This contradiction of the previous conclusion based upon size indices is readily explained by consideration of the tremendous difference in complexity and technology. For example, a 90,000 DWT tanker could be built for approximately \$50-60 million, whereas a nuclear attack aircraft carrier of comparable tonnage would cost \$500-600 million.

Figure 4.5-- Share of Merchant and Naval Vessels (over 1000 DWT) Building or Under Contract on 1 January 1955-1976



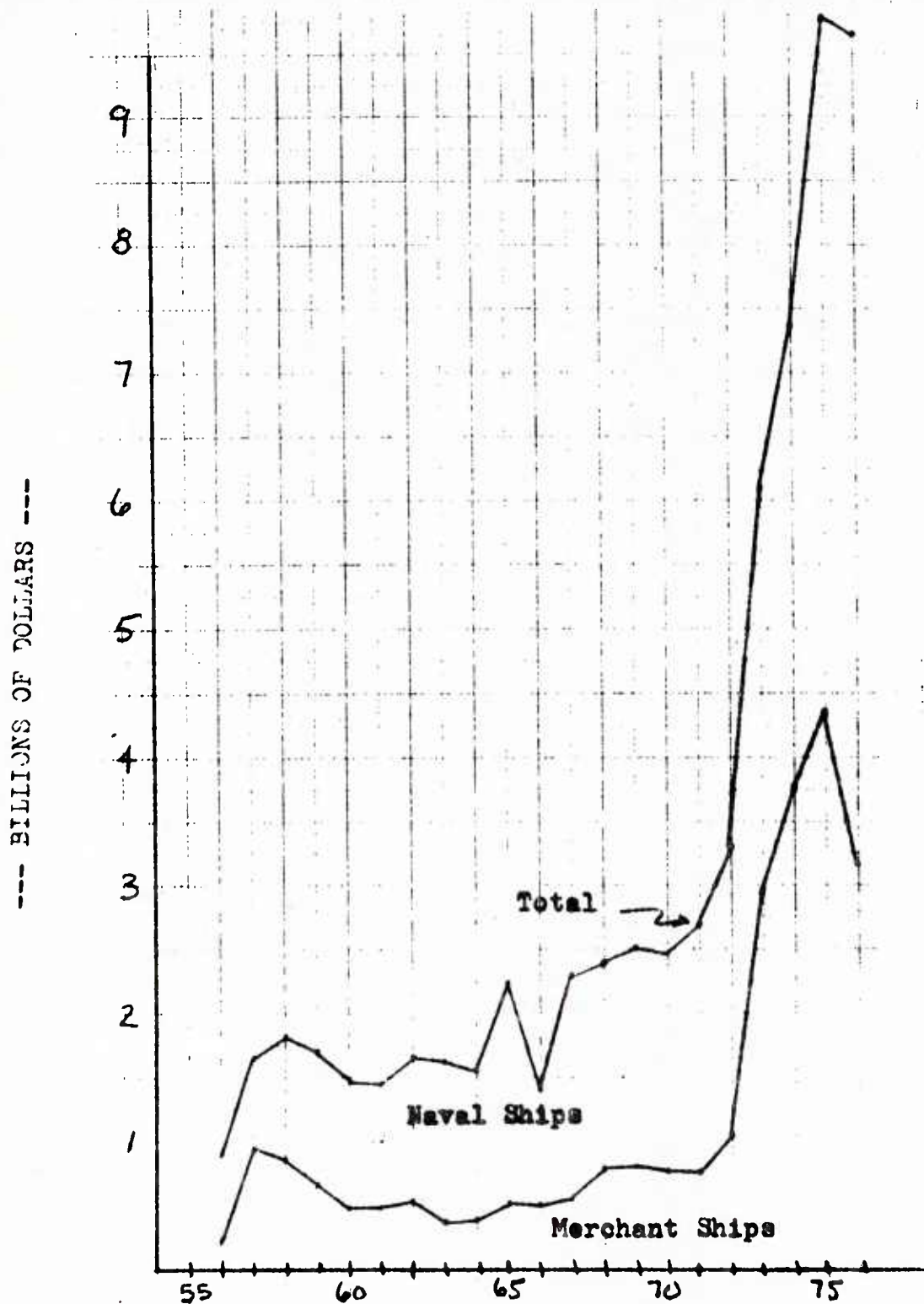
source: Shipbuilders Council of America

Figure 4.6-- Merchant and Naval Vessels (1000 gross or light displacement tons or more) Building or Under Contract on 1 January 1957-1976.



Source: Shipbuilders Council of America

Figure 4.7-- Approximate Value of Unfinished Shipbuilding Work
in Private Shipyards, 1 January 1955-1976



Source: Shipbuilders Council

Naval-type vessels are produced exclusively for federal government agencies, predominantly the U.S. Navy, which is the largest single customer of the U.S. shipbuilding industry. Additionally, another government agency, the Maritime Administration, provides 35-50% of the cost of certain new merchant vessels through the construction-differential subsidy program. Table 11 shows how the amount of subsidized new merchant ship construction has grown to the extent that today a large majority of shipbuilding is subsidized. Considered with the value share of naval shipbuilding, this means that the federal government accounts for approximately three-fourths of the industry backlog value and is therefore in a very monopsonistic position to determine the character and direction of the shipbuilding industry.

C. By type of ships produced

As was mentioned previously, the merchant and naval shipbuilding market sectors respond to different stimuli. The merchant sector is primarily responsive to economic forces, whereas the naval sector is primarily responsive to governmental and political forces. Variation in the type of ships that are produced for each market sector will reflect these motive forces. Figure 4-8 shows the tonnage share and types of merchant vessels building or on order for the past two decades. Very noticeable from this

Table 10-- Value of Shipbuilding Work Done (\$ millions)

<u>Year</u>	<u>New Self-Propelled Military Vessels</u>	<u>New Self-Propelled Non-Military Vessels</u>
1967	974	362
1968	885	478
1969	869	457
1970	1086	514
1971	1047	578
1972	1100	816
1973	1333	1159

Source: Bureau of the Census

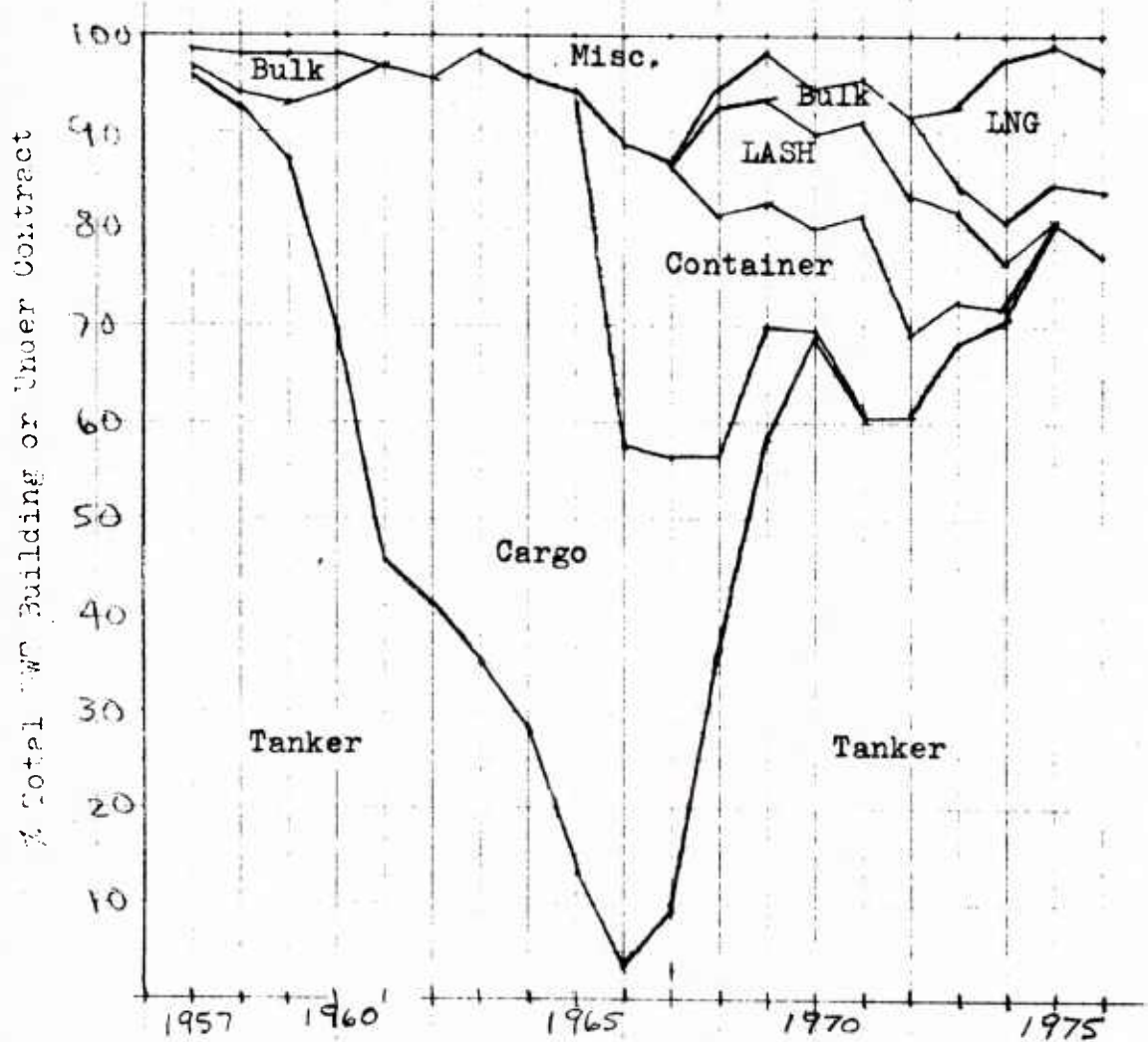
Table 11--Merchant Vessels Subsidized by the Maritime Administration^a

<u>Year</u>	<u>Number</u>	<u>Percent</u>	<u>DWT (000)</u>	<u>Percent</u>
1964	36	78.3	432.3	65.1
1965	49	94.2	567.7	84.1
1966	57	83.8	573.9	59.2
1967	62	74.7	687.7	58.1
1968	58	65.9	775.3	41.3
1969	43	63.2	738.0	36.9
1970	29	53.7	547.4	25.8
1971	29	55.8	614.1	25.9
1972	31	52.5	913.5	31.9
1973	48	51.6	2807.7	62.1
1974	57	61.9	4081.6	67.4

^aVessels 2000 gross tons and larger building or on order on January 1.

Source: Maritime Administration

Figure 4.8-- Types of Merchant Vessels (over 1000 DWT)
Building or Under Contract 1 January 1955-1976

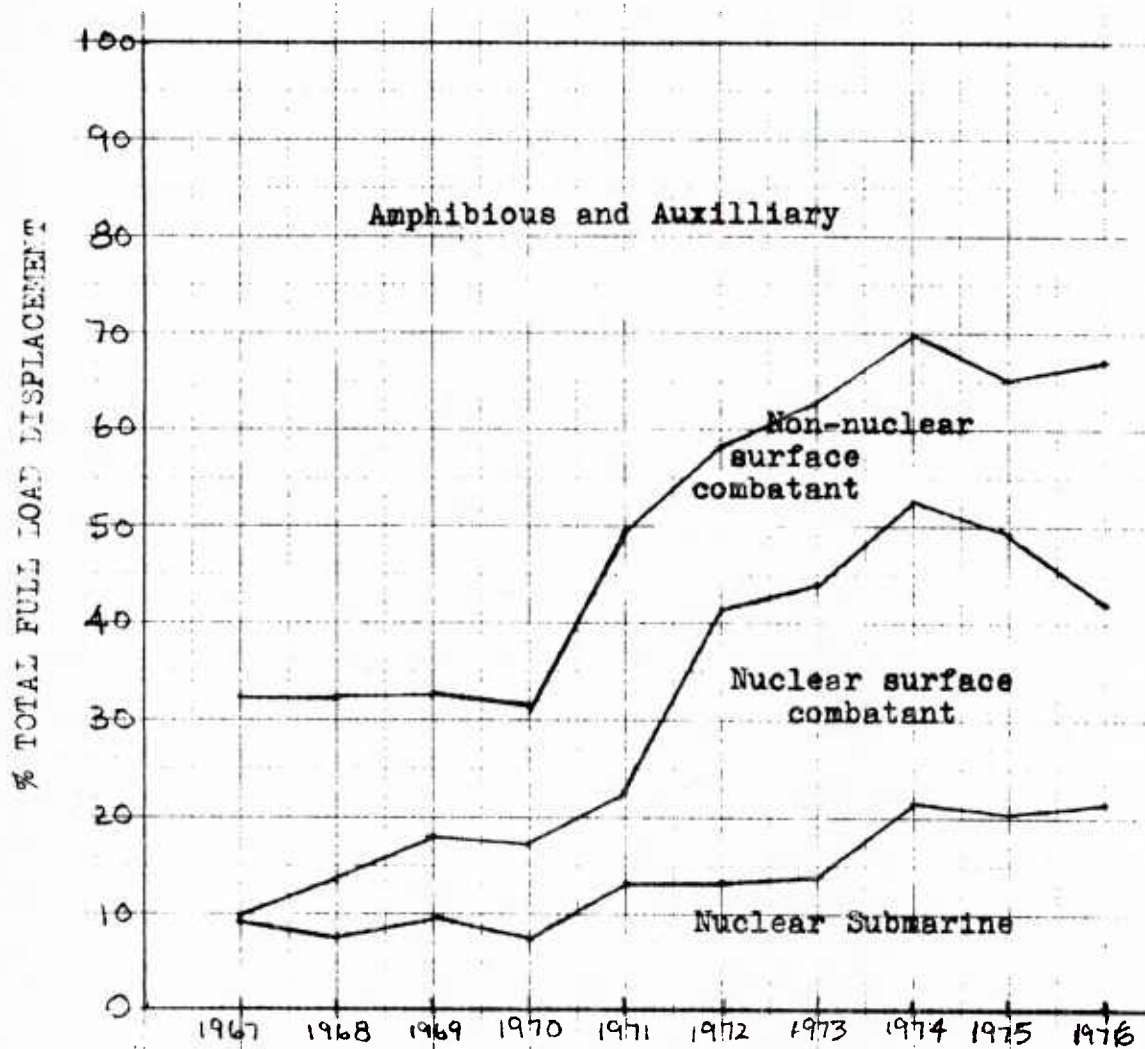


source: Marine Engineering/Log

figure are the facts that the market demand for new cargo ships has disappeared after once representing over 80% of the merchant backlog tonnage, and that tanker demand has varied from 95% to less than 5% and then back to nearly 80% of the present backlog. Also apparent is the rise of new-technology, high-efficiency container and LASH types and, most recently, the LNG tanker. All of these are reflections of economic pressures and market demand of their times. Today, oil tankers and LNG tankers dominate the market demand with 77% and 12% of the backlog tonnage, respectively.

Figure 4-9 shows the tonnage share and types of major naval vessels building or under contract for the past ten years. Evident from this is the emergence of a very large proportion of nuclear vessels. This, again, is representative of the governmental and political policies in force, which have been heavily inclined towards a more "nuclear Navy" as evidenced by the nuclear guided-missile frigate, aircraft carrier, attack submarine and Trident missile submarine building programs. The other major programs in progress are the DD-963 destroyers, the Amphibious Assault Carriers (LHA), and submarine and destroyer tenders. Presently, the nuclear shipbuilding program accounts for 43% of the backlog by tonnage and approximately 56% (\$5 billion) by contract value (49% by tonnage and 59% [\$5.9 billion] by announced contract

Figure 4.9-- Types of Naval Vessels (over 1000 Tons Full Load Displacement) Building or Under Contract 1 January 1967-1976.



source: Marine Engineering/Log

value in 1975). Amphibious and auxiliary-type ships have consistently represented a very large portion of naval shipbuilding. In 1976 this group represented 33% of the backlog tonnage, but only 12% (\$1.1 billion) of the contract value (35% tonnage and 11% [\$1.1 billion] in 1975).

4.3 Summary

The U.S. shipbuilding market thus comprises two market sectors--merchant and naval shipbuilding. Within world shipbuilding, the U.S. merchant sector is only a minor influence; however, considered in conjunction with the extensive U.S. naval shipbuilding sector, the United States must be ranked with Japan and the U.S.S.R. as the leading shipbuilding nations. The U.S. market is a closed system in that it is effectively isolated from the rest of the world market, for American shipbuilders are essentially excluded from building vessels for foreign buyers due to the higher U.S. costs and foreign production of U.S. flag merchant or naval vessels is prohibited by federal law.

The merchant shipbuilding sector today represents approximately 50% of the vessels and 90% of the tonnage building or under contract, but only about one-third of the value of unfinished shipbuilding work. Of the twenty-five shipyards that are presently capable of constructing major merchant vessels, only thirteen

are actively engaged, and these are dominated by four major producers which represent more than 70% of the backlog tonnage. The market demand for merchant vessels is determined primarily by oil and LNG tankers which account for 90% of the market sector backlog tonnage.

The naval shipbuilding sector, which represents approximately two-thirds of the value of unfinished shipbuilding work, is supplied by six shipyards, but is clearly dominated by three firms which represent nearly 90% of the backlog tonnage. This is primarily the result of ship acquisition policies of the Department of Defense and the nuclear shipbuilding program. Unlike the merchant sector, market demand in the naval shipbuilding sector is determined by government policy and politics. This is manifest in the large proportion of the tonnage (43%) and contract value (56%) represented by nuclear ships.

The U.S. shipbuilding market is dominated by one customer--the federal government, primarily the U.S. Navy. Not only is the government the sole customer in the naval sector, it also provides, through the Maritime Administration, direct financial subsidy, amounting to from 35% to 50% of the new construction costs of the majority of merchant ships. Therefore, the U.S. shipbuilding market can be characterized as being oligopolistic in terms of U.S. industry supply to the

merchant and naval fleets, and monopsonistic in terms of the major customer in the market.

CHAPTER 5

CONGLOMERATES IN THE U.S. SHIPBUILDING INDUSTRY

The discussion of the previous chapters has been directed toward the development of the character of shipbuilding in the United States. The remainder of this study will build upon this to discuss changes in the shipbuilding industry which have been attributed to the conglomerate movement. To be presented initially is a brief historical perspective on conglomeration and some of the important features of conglomeration. These will be discussed relative to the shipbuilding industry with specific business organizations identified and discussed for each of the major U.S. shipbuilders. Following this chapter will be a discussion of influences of conglomerates seen in the shipbuilding industry.

5.1 Conglomerate Defined

Ansoff has proposed four broad classes of growth strategies for a firm: market penetration, market development, product development, and diversification [3]. The last strategy, diversification, will be the one of interest in this study. Diversification can be achieved in three modes of acquisition: horizontal,

vertical, and conglomerate. Broadly defined, horizontal acquisitions involve firms that are direct competitors; vertical mergers involve firms that had a buyer-seller relationship; and conglomerate mergers are those that involve neither horizontal nor vertical mergers. More specifically:

A horizontal consolidation rounds out a firm's product line by increasing the line of goods sold to its customers. A vertical consolidation builds the firm's capabilities either "forward" toward its markets or "backwards" toward the source of supply. A conglomerate is the complement of the above two to the complete set: it describes "all other" mergers, and in popular parlance describes them as "unrelated" [13].

This notion of the conglomerates as being built through "all other" and "unrelated" mergers will be adopted for the purposes of this study.

5.2 Historical Perspective of Business Mergers and Acquisitions

Business mergers and acquisitions over the past century have had a very large influence upon the structure and development of American industry. During this period there were five major periods of merger activity. Each of these built upon the experiences of those past and the changing law and public policy towards business combinations. The first such period was that of the formation of the Great Trusts from 1879 to 1893. The trusts were formed by transferring ownership of a portfolio of companies from the

stockholders to trustees who managed the business portfolio. This era saw the formation of such large business organizations as the Standard Oil Trust (1879), which controlled nearly all of the U.S. oil refinery and pipeline capacity, the Cottonseed Oil Trust and the National Lead Trust, and large holding companies such as the Diamond Match Company (1889), the American Tobacco Company (1890), the United States Rubber Company (1892), and the General Electric Company (1892) [42, p. 20]. This period of merger activity subsided in 1893 due to an economic recession and the series of adverse antitrust court decisions.

This first major period served as a prelude to heightened merger activity over the turn of the century from 1895 to 1904. Building upon the previous period, which had been dominated by trust formation, and in response to the changed public policy outlawing trust formation, this second major period was characterized by the combination of many firms in the same industry into a single large corporation, i.e. horizontal mergers, resulting in large concentrations of industry volume. Many of the large corporations formed during this period continue today as major firms in their industries, firms such as United States Steel, Republic Steel, Bethlehem Steel, and Dupont. This merger wave closed with adverse Supreme Court antitrust decisions holding that many of the

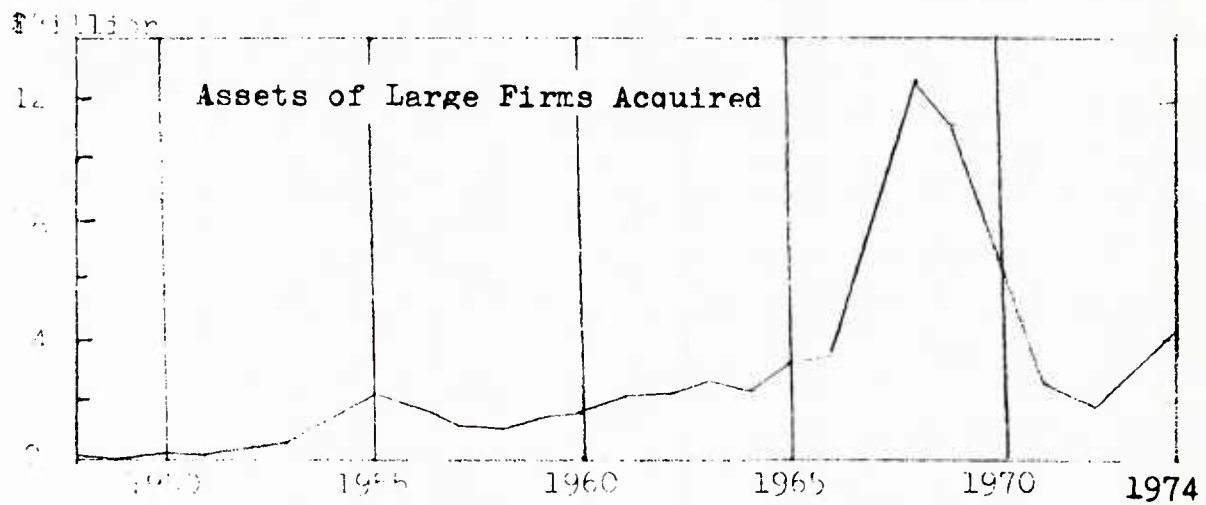
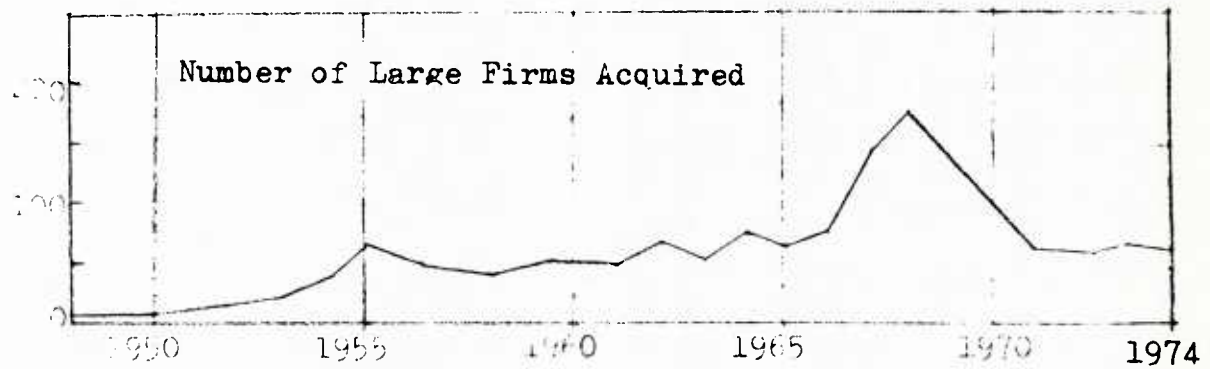
large corporate mergers were in violation of the Sherman Anti-Trust Act (1890). As a result, many of the corporate giants were ordered to divest certain of their business holdings. Notable among these were the American Tobacco Company, which became the R. J. Reynolds Tobacco, Liggett & Meyers Tobacco, P. Lorillard, and United Cigar Stores Companies [United States v. American Tobacco Co., 221 U.S. 106 (1911)], and the Standard Oil Company [Standard Oil Co. v. U.S., 221 U.S. 1 (1911)]. United States Steel emerged essentially intact [United States v. U.S. Steel Corp., 251 U.S. 417 (1920)].

A third merger movement occurred during the period 1925-1931, coinciding with one of the greatest periods of stock market activity in U.S. history. For the three successive years from 1928 to 1930 the New York Stock Exchange trading exceeded one billion shares for each year. Not until 1959 was the one billion share mark again reached, and then with more than four times the number of firms listed on the exchange. Present large corporations originating from merger activity of this period are National Steel, General Foods, United Aircraft, Caterpillar Tractor, National Dairy Products, and others. Another aspect of this movement was the acquisition of many major public utilities by holding companies, resulting in several utility empires. This acquisition pattern was met with a new public merger policy in the Public Utility Holding

Company Act of 1935 which caused a number of the utility empires to divest themselves of many operating subsidiaries. The most significant contribution of this merger period to the present wave of conglomeration is probably the shift in corporate organizational structure from a highly centralized and functionally specialized form to the decentralized, multi-divisional form. This was pioneered by Alfred P. Sloan at General Motors as well as those at Dupont and Standard Oil of New Jersey, and can be considered as a major stimulus for the conglomerate movement because the new technique greatly enhanced the ability of management to control a widely diversified business effectively.

The fourth major period is that from World War II to the mid-1960s, which saw the rise of such enterprises as Sperry Rand, Minnesota Mining and Manufacturing, Textron and Ogden, Litton, Tenneco, General Dynamics and Kaiser which have major holdings in shipbuilding. Whereas the first two merger periods near the turn of the century were characterized by trust and horizontal mergers, the third period, although continuing this trend, gave rise to more vertical mergers, integrating manufacturers, suppliers, and distributors. This period not only exhibited expansion of the vertical merger trend, but also a tremendous upsurge in the number of conglomerate mergers. Figure 5-1 portrays the significant surge of all types of merger as well as that of conglomerates for manufacturing and mining firms

Figure 5.1-- Large Manufacturing and Mining Firms Acquired
1948-1974



source: Bureau of Economics, Federal Trade
Commission

during this period. The period of incredible upsurge in merger activity in the late 1960s can be considered as a fifth merger period due to the significantly increased annual rate of mergers, even though the characteristics are very much the same as for the early 1960s. A distinguishing feature between these two periods is the significance of the conglomerate merger. To be sure, conglomerate mergers play an important role in both periods, but, as shown in Table 12, the relative importance of horizontal and vertical mergers has declined markedly, from a combined total of 31% in 1960 to 12% in 1970, with a corresponding growth in conglomerates. Many of the characteristics of the present conglomerate movement were also exhibited by the formation of large holding companies in the 1900 and 1920 periods; however, the recent movement is characterized by a significant portion of "pure" conglomerate mergers--those that involve firms that are wholly unrelated. Conglomerate mergers have been made in the past by older, established firms; however, the most striking characteristic of this period is the use of the conglomerate device by relatively new firms in order to achieve rapid growth. Some of these firms have grown so rapidly that in a few years they have risen from virtual obscurity to be included among the 100 largest manufacturers.

Table 12-- Large* Mining and Manufacturing Merger Activity
by Type of Merger

Year	Horizontal	Vertical	Conglomerate	
			Total	Pure
1960	15.6%	15.6%	68.8%	12.5%
1961	18.3	21.7	60.0	18.3
1962	13.8	18.8	67.5	18.8
1963	14.6	15.9	69.5	17.1
1964	19.8	15.4	64.8	7.7
1965	16.5	13.2	70.3	19.8
1966	10.9	10.9	78.2	22.8
1967	6.5	9.5	83.9	23.8
1968	6.3	9.2	84.5	25.1
1969	9.0	9.7	81.3	33.5
1970	9.2	3.1	87.8	38.8

* Firms with assets of \$10 million and more
source: Bureau of Economics, Federal Trade Commission

5.3 General Characteristics of Conglomerates

A. Some reasons for the recent conglomerate movement

Simply speaking, the motivation for any voluntary business consolidation is to forward the goals of the firm, as seen by its management, by a means most advantageous to the firm, but ultimately falling under the purview of public policy. The history of business mergers and acquisitions has shown that changes in the techniques used by companies are generally in reaction to changing public policy whether it be decisions in law, interpretations of existing law, anti-trust law enforcement policies, tax policies, incorporation laws, or other elements of public policy. Over recent years, companies have turned to conglomerate acquisitions primarily for two reasons. First, the success of anti-trust suits before the federal courts has led many executives to believe that the courts have effectively barred the way to many horizontal and vertical mergers, thereby making conglomerate mergers the only feasible means of merger growth. Since conglomerates have had much less impact upon market concentration, it became increasingly clear that a large horizontal or vertical acquisition was likely to be challenged successfully, whereas the conglomerate appeared less vulnerable to such attack. A second motivation for conglomerate acquisition has been financial. A major factor in this reason deals with the stock market and the price-earnings multiple, prompting

Business Week to term conglomerates as the "figment of Wall Street's imagination" [12]. Simply speaking, the higher a conglomerate's stock price relative to its earnings per share, the less it spends to buy another company. Therefore, if a conglomerate with a high price-earnings multiple acquires a company with a low multiple, the end result (assuming equal numbers of shares outstanding) will be that the multiple of the conglomerate will rise, and probably also its stock price will rise.

This is not to say that the motivations for conglomerate acquisitions are so easily identified and classified. On the contrary, they are widely diverse and in general may be difficult to assess in a particular case. Many other major factors have been offered, some of which are briefly discussed below [55, 32, 13]:

1. desire of owners of smaller firms to convert their holdings into more readily marketable securities;
2. desire of management of large firms for growth for its own sake;
3. desire to limit competition or achieve monopoly profits;
4. the opportunity to bring more efficient management personnel or techniques to smaller or less successful firms;

5. the possibility of achieving economies of scale by combining product lines, production techniques, or staff services;
6. response to shrinking opportunities for growth and/or profit in one's own industry due to shrinking demand or excessive competition;
7. desire to diversify business activities to reduce risks by using one firm's cash flows or credit in another firm with financial difficulties or limited access to capital;
8. desire to overcome critical lacks in one's own company by acquiring the necessary complementary resources, expertise, technology, or factors of production;
9. desire to more fully utilize particular resources or personnel controlled by the firm, with particular applicability to managerial skills;
10. desire to acquire sources of cash flow to finance further acquisition activity;
11. desire of managers to create an image of themselves as aggressive managers who recognize a good thing when they see it;
12. desire to manage an ever-growing portfolio of firms, i.e. empire building;
13. desire to displace an existing management; and

14. a desire to utilize tax loopholes available through merger or acquisition.

B. Characteristics that encourage conglomerate take-over

In general, those characteristics of a firm which satisfy the conglomerate growth needs and policies, such as those above, tend to encourage take-over. Some of the specific traits which have been found to be significant include the following [55, 32, 13]:

1. management that is willing to be acquired for any of a number of reasons such as retirement of major management shareholders, need for cash, or inadequate successorship;
2. bad management resulting in dissatisfied stockholders or ineffective resistance to take-over;
3. unused borrowing power and excessive liquidity;
4. huge amounts of book write-off for depreciation or depletion;
5. cash flow that is unbalanced due to either a continuous excess of cash over internal investment opportunities or continuously insufficient cash for profitable investment opportunities; and
6. operating losses which provide appealing tax shields.

C. Allegations concerning conglomerates in general

With the rise of the conglomerate movement of recent years has come increased awareness of the public and attention in the press, literature, and particularly in government agencies, not the least of which are Congress and the Justice Department. As the major conglomerates have become bigger and bigger, the increased publicity and scrutiny has brought forward numerous allegations and fears concerning the detrimental effects of conglomerates. Much of this has come about through the popular view of the monster octopus conglomerate gobbling up the innocent small-fry companies with ever-increasing regularity and appetite, and a rekindling of the "big is bad" doctrine from the trust-busting days. Most of the allegations are associated with potentially harmful effects of conglomerates on competition in the U.S. economy and possible conflict with anti-trust laws because of the attainment of unfair and decisive competitive advantages. The characteristics under attack in this regard derive primarily from size and diversity. Also, other allegations have arisen concerning an imputed bad character of conglomerate firms and deleterious social and community effects.

Many allegations have received wide and detailed discussions throughout the literature; however, few concrete supportable conclusions have been made. It is beyond the scope of this study to analyze them in any

detail, but those most frequently encountered will be briefly discussed.

1. Reciprocity: This occurs when companies agree, either tacitly or explicitly, to buy from one another. It has been alleged that conglomerates are able to coerce suppliers or other companies into buying from them instead of, and at a disadvantage from, other competitors because of the conglomerate's power in many markets. The literature is generally supportive of the potential for reciprocal dealing occurring; however, the fact that there is a potential for such anti-competitive dealings does not certify its existence. Many writers conclude that, even if reciprocal dealing is a consequence of conglomeration, it is only of minor significance and in certain situations may be beneficial. Only a very few cases have arisen in which anti-competitive or fraudulent reciprocity has been substantiated.
2. Tied-in sales and exclusive dealings: It has been argued that if a conglomerate has monopoly power in one market, it can exert this power over other markets by requiring or tying-in the sale of products over which it has no monopoly power with those over which it does. Again, the prevailing conclusion seems to be that conglomeration does increase the potential for such a malady, but there is no substantiation of its prevalence.

3. Elimination of potential competition: Anti-competitive aspects of this charge concern elimination of the conglomerate as an additional competitive force because, absent acquisition, it would have been a "potential" entrant into a particular product or geographical market. The definition and extent of "potential" is currently the subject of federal and FTC court action; however, this is felt to be most successfully charged by the FTC in cases in which a leading firm has been acquired [80].
4. Unfair economies of scale: The assertion here is that conglomeration will yield economies of scale which will ultimately reach anti-competitive proportion. The substance of this argument appears to be that the economies of scale will be severe barriers to entry and will drive out existing competition. This seems very speculative in nature, but nonetheless had been successfully prosecuted in some cases, such as in the striking down of Procter & Gamble's merger with Clorox [FTC v. Procter & Gamble, 386 U.S. 568 (1967)], and General Foods' acquisition of SOS [General Foods Corp. v. FTC, 386 F 2d. 936 (1967)].
5. Predatory pricing: Predatory pricing practices are associated with conglomeration because it is felt that it can subsidize sales below cost in one market

through holdings in other markets, thereby driving out competition and raising barriers to entry. It is generally agreed that predatory pricing is certainly possible in conglomerate situations and is a real and present danger, but in the absence of effective barriers to entry it would be impossible to indefinitely maintain a monopoly position by a superior capacity to lose money.

6. Political influence: This fear of undue or illicit political influence seems well-founded, especially since recent revelations of illegal campaign contributions and foreign subversive activities of certain large corporations; however, it does not seem to warrant indictment of conglomerates in general. By and large the conclusion of the literature on this point is that political influence can be gained by conglomerates, but this is also undeniably true for other large companies or special interest groups such as labor unions.
7. Centralization of headquarters: Some displeasure has been expressed concerning relocation of management headquarters of newly acquired firms, dislocation of previous managers and absentee management which is insensitive to local situations, especially when a facility is closed. The literature is generally sympathetic to these matters, but not to any great extent in the overall scheme of things.

8. Community of interest: It has been alleged that, for example, two large conglomerates can agree, either tacitly or explicitly, to cooperate for the betterment of both, such as in agreeing to less than vigorous competition of one firm in one market in return for similar behavior of the other firm in another market. This permits both to strengthen themselves in their "protected" market. Restriction of this malady to conglomerates is not supported by the literature.

9. General bad character: It has been alleged that conglomerate management by its very nature is dishonest and deceitful, particularly in relation to the stockholders, because of "creative accounting" practices and consolidated financial reporting. This is probably true in some instances, but it should be equally true that some take pains to inform their investors. Again, this allegation is difficult to show conclusively; however, new FTC financial reporting regulations have sought to minimize its occurrence.

D. Economic performance of the conglomerate

Even though the conglomerates have been the target of numerous allegations and criticisms concerning their impact upon the industrial economic structure, as discussed above, there are other characteristics of the conglomerate that can determine their net economic performance as a business entity. Joel Dean has suggested some sources of

superior and inferior economic performance of the conglomerate in comparison with its constituent companies, i.e., what would have happened absent conglomeration versus what will happen with it [13]. These are listed below.

--Potential sources of superior economic performance:

1. Better rationing of capital
2. Better mobilization of internally-sourced capital
3. Lower cost of capital
4. Better allocation of human resources
5. Better successionship
6. Full utilization of tax shields
7. Greater managerial accountability
8. Better financial controls
9. Greater cross-industry mobility
10. Scale economies of staff services

--Potential sources of inferior economic performance:

1. Distortion of corporate goals
2. Non-economic product mix
3. Limited cross-industry transferability of managerial ability
4. Imperfect profit center decentralization
5. Excessive size
6. Excessive preoccupation with growth
7. Top-heavy capital structure
8. Impaired managerial incentives

5.4 Entrance of Conglomerates into the U.S. Shipbuilding Industry

A. Shipyard corporate changes

The corporate structure of the U.S. shipbuilding industry has undergone a marked change since 1959. Many of the previously independent shipyards have been merged with large corporations, most notable of which has been the conglomerate acquisition of a number of companies formerly totally devoted to shipbuilding. These shipbuilding companies are now being operated as divisions or subsidiaries of their corporate parent. The most significant of these changes are shown below.

Shipbuilding Company	Acquired By	Year
Avondale Shipyards	Ogden Corp.	1959
Puget Sound Bridge & Dredging Co.	Lockheed Aircraft	1959
Ingalls Shipbuilding	Litton Industries	1961
National Steel & Shipbuilding Co.	Kaiser Industries (50%) Morrison-Knudson (50%)	1961
Gunderson Brothers Shipyard	FMC Corp.	1965
Newport News Shipbuilding & Drydock Co.	Tenneco Inc.	1968

Other changes have also taken place. In 1964 Bethlehem Steel Corp. (Shipbuilding Division) closed its Quincy shipyard

and sold it to the General Dynamics Corp. The Quincy facility brought to General Dynamics shipbuilding the capability to construct both merchant and Naval surface ships. Until that acquisition, GD shipbuilding activities were directed solely towards submarine construction at their Electric Boat Division. Bethlehem Steel's disposition of the Quincy shipyard resulted from corporate financial difficulties and the decision to withdraw from Naval ship construction, which had been the primary function of the Quincy yard. This policy has been adhered to with the exception of contracts for two ammunition ships at their Sparrows Point shipyard in 1965.

Bath Iron Works merged with the flooring manufacturing firm Congoleum-Nairn in 1967. Up to that time, Bath had been almost totally dedicated to shipbuilding and was long considered to be the premier builder of Navy Destroyers. Through further corporate diversifications into the home furnishings industry, the Bath shipbuilding company has been absorbed into the Congoleum Corporation. Shipbuilding now represents only a minor portion of the overall corporate business activities.

In 1969, Seatrain Lines Inc. took over the facilities of the former New York Navy Yard on a long-term lease arrangement from the government, with federal and New York City financial assistance. In turn, it agreed to hire and train 9000 workers, most hard-core unemployed, over a

period of five years. The Seatrain shipyard is now engaged in construction of 225,000 dwt supertankers.

Table 13 lists the major U.S. shipbuilding parent corporations and their corporate classifications which have been adopted for this study. Under the definition of conglomerate adopted in the previous section, many of the major U.S. shipbuilders are now controlled by conglomerate corporations. Almost all of the companies, conglomerate as well as non-conglomerate, which now control major U.S. shipbuilders, are very large corporations in the overall national industry. However, because of their corporate size, shipbuilding activities generally do not make up a large portion of the firms' interests. These points are shown in Tables 14, 15, and 16. Table 14 presents the Fortune 500 rankings of the twelve major shipbuilding parent corporations, showing that many rank very high in national industry. Tables 15 and 16 present brief divisional profiles for the conglomerates and the corporations, respectively, showing the portion of overall business activities represented by shipbuilding and repair work.

B. Some motives for conglomerate shipyard acquisitions

Numerous motives for conglomerate acquisitions were presented in the previous chapter. Many of these, as well as others, have played a part in the conglomerate take-over

Table 13-- Major U.S. Shipbuilder Corporate Classifications

<u>Shipyard</u>	<u>Parent Corporation</u>	<u>Classification</u> *
Avondale Shipyards	Ogden Corporation	Conglomerate
Bath Iron Works	Congoleum Corp.	Conglomerate
Electric Boat Div.	General Dynamics	Aerospace and Defense Corp.
FMC Shipbuilding	FMC Corporation	Conglomerate
Ingalls/Litton Shipyards	Litton Industries	Conglomerate
Lockheed Shipbuilding and Construction	Lockheed Aircraft	Aerospace and Defense Corp.
National Steel and Shipbuilding Co. (NASSCO)	Kaiser Industries**	Conglomerate
Newport News Shipbuilding and Drydock Co.	Tenneco Inc.	Conglomerate
Quincy Shipbuilding Division	General Dynamics	Aerospace and Defense Corp.
Seatrains Shipyard	Seatrains Lines	Shipping Corp.
Sparrows Point Shipyard	Bethlehem Steel Corp.	Steel Corp.
Sun Shipbuilding	Sun Oil Co.	Oil Corporation
Todd Shipbuilding	Todd Shipyards Inc.	Shipbuilding Corporation

* Classifications in accordance with the definition of conglomerate discussed and adopted previously

** NASSCO is in dual ownership of Kaiser Industries (50%) and Morrison-Knudson Inc. (50%) but management and operational control lies with Kaiser Industries.

Table 14-- Fortune 500 Rankings of the Major U.S. Shipbuilding Parent Corporations

<u>Parent Corporation</u>	<u>Ranking*</u>		
	<u>By Sales</u>	<u>By Assets</u>	<u>By Net Income</u>
Ogden Corp.	138	176	182
Congoleum Corp.	414	439	409
General Dynamics	98	125	109
FMC Corporation	86	84	80
Litton Industries	49	66	233
Lockheed Aircraft	50	101	191
Kaiser Industries	199	129	122
Tenneco Inc.	22	15	18
Seatrains Lines	N/L	N/L	N/L
Bethlehem Steel	28	24	30
Sun Oil Co.	36	27	34
Todd Shipyards	N/L	N/L	N/L

N/L Not Listed

* 1976 rankings from Fortune, May 1976

Table 15-- Brief Shipbuilding Conglomerate Divisional ProfilesTenneco Inc. (Newport News Shipbuilding & Drydock Co.)

	<u>% 1975 Revenues</u>
Manufacturing	
Construction and Farm Equip.	22%
Auto Components	5
Shipbuilding	11
Oil Operations	26
Pipeline Systems	21
Chemicals	6
Packaging	7
Land Use	3

Litton Industries (Ingalls/Litton Shipbuilding)

Business Systems and Equipment	30%
Defense, Commercial and Marine Systems	
Navigational & Control Systems	7
Commercial & Data Systems	7
Marine Engineering & Production	22
Industrial Systems & Equipment	19
Professional Services & Equipment	15

Ogden Corp. (Avondale Shipyards)

Metals (Recycling, scrap, smelting, refining)	40%
Marine Construction	25
Shipping	6
Marine Terminals	6
Food Products	10
Food Service	10
Leisure Service	3

FMC Corporation (FMC Shipyard)

Machinery (Petroleum & Fluid Control, Materials handling, construction & mining, food & agriculture mach., environmental, power transmission, rail & marine equip., defense equipment)	59%
Chemicals	41

Table 15-- ContinuedCongoleum Corp. (Bath Iron Works)

Home Furnishings	70%
Shipbuilding	25
Industrial Products	5

Kaiser Industries (NASSCO)

	<u>% 1975 Earnings</u>
Kaiser Steel	32%
Kaiser Engineering	5
Aerospace & Electronics	
Kaiser Broadcasting	
Sand & Gravel	1
Shipping	
Other	
Equity in Earnings From Unconsolidated Holdings:	
Aluminum	34
Kaiser Resources	19
Hamersely Holdings	7
Kaiser Cement & Gypsum	1
NASSCO	1

data source: Corporate Annual Reports

Table 16-- Brief Shipbuilding Corporate Divisional ProfilesLockheed Aircraft (Lockheed Shipbuilding and Construction Co.)

	<u>% 1975 Revenues</u>
Aircraft	64%
Missile, Space Propulsion and Electronics	34
Shipbuilding and Construction	2

Seatrains Lines (Seatrains Shipyard)

Freight and Charter	56%
Shipbuilding	44

Sun Oil Co. (Sun Shipbuilding)

Refined Products	76%
Crude, Condensate & Synthetic Crude	11
Natural Gas	6
Related Products & Services	5
Shipbuilding & Repair	2

Todd Shipyards Inc. (Todd Shipyards)

Marine Construction	94%
Machinery Manufacture	6

General Dynamics Inc. (Quincy & Electric Boat Divisions)

Military Aircraft	12%
Commercial Aircraft	4
Tactical Missiles	9
Space Systems	6
Marine Construction & Repair	35
Material Service & Resources	16
Telecommunications	10
Data Products	2
Other	6

Bethlehem Steel Corp. (Sparrows Point Shipyard)

Divisions not listed- Shipbuilding approximately 1%

of shipbuilders. Although it is generally not possible to determine the exact reason for a particular merger, review of some known factors, pertaining in general or to a specific case, can yield greater insight into the motivation for conglomerate entrance into the shipbuilding industry.

First, three of the conglomerate shipyard acquisitions (Avondale, Ingalls and National Steel) occurred close to 1960. This was a recessionary period where poor financial outlooks and low orderbook for the shipyards may have played an important role in their decision to merge. Additionally, both Ingalls and Newport News were known to have been in financial difficulty at the time of their acquisition.

A second factor which may have drawn conglomerates towards acquisition of a shipbuilder was the policy of shipbuilding progress payments by the Navy. A typical problem which faces many conglomerates is a lack of cash available for further diversification. Progress payments on Navy shipbuilding contracts may have been an aid in this regard. Until about 1970, the Navy routinely made partial payments to shipbuilders based upon costs incurred. The payments were made weekly, but since the shipbuilder generally paid a large portion of the early bills on a monthly basis, the company, in effect, was given a free loan for a period of time. This motive has been associated by some with the Tenneco acquisition of Newport News. The payment policies

have been changed since 1970 and present no substantial advantage any longer.

Some other more specific motives for merger are:

--Avondale Shipyards, which was established in 1938 and specialized in construction of barges and small oceangoing vessels, began a steady growth following World War II. In 1958 the shipyard was awarded its first contract for construction of large merchant vessels, and this was followed by award of more large oceangoing ship construction contracts, establishing Avondale as a large builder of seagoing vessels. The original owners were at that time having the problems of expanded financial and managerial demands experienced by many owners of small, closely-held corporations that had become large, and negotiations resulted in Ogden Corporation acquiring the Avondale Shipyard in 1959 [66, Vol. II, p. 10833 and 68, p. 787].

--Marine construction began at the National Steel & Shipbuilding Co. in 1945, but its greatest growth has taken place since 1957 when the decision was made to expand into the middle tonnage merchant ship construction. That period was generally considered to have been unfavorable for the shipbuilding industry as a whole; however, NASSCO achieved its greatest growth in the following decade, early in which ownership passed to Kaiser and Morrison-Knudson [66, Vol. II, p. 10979].

--The Newport News Shipbuilding and Drydock Co. offered Tenneco an opportunity for considerable growth and expansion in the shipbuilding industry. This was especially appealing due to the anticipated increase in shipping demand from the Alaskan North Slope oil fields. Also, Tenneco had been negotiating with the Russians for a large sale of natural gas; consequently, this produced an investment opportunity in the construction of large oil tankers as well as LNG tankers [19].

--Litton Industries is a technologically-oriented corporation which achieves growth through the development of new products for new markets, new products for old markets and the improvement of existing products for existing markets. Litton planned to acquire other companies whose products and future might also benefit from technological innovations and management concepts which were then envisioned or believed to be forthcoming. The Ingalls Shipbuilding Company offered Litton an attractive opportunity to market its technology, especially in view of their connections with the Defense Department and the new Total-Package Procurement policies for Navy shipbuilding [66, Vol. II, p. 10804, and 68, p. 997].

--Congoleum Corp. is the only conglomerate involved in the shipbuilding industry which had its origin as a shipbuilder. Its original firm, Bath Iron Works, was bought into by William Kyle in 1964. Before that time, Kyle had

been a corporate entrepreneur; starting up companies, building them up, and selling them at a profit. His desire to run a company with a billion-dollar potential that was a quality producer in an industry hard to get into, brought him to Bath. Kyle seized control in 1967 and almost immediately began diversification with the acquisition of Congoleum-Nairn, which was followed by several other home furnishings companies [7].

5.5 Summary

Conglomerates were identified as being composed of unrelated business segments through mergers and acquisitions that are neither vertical nor horizontal in nature. Through five major periods of merger activity since 1879, conglomeration has become a dominant means of diversified business growth since about 1960. An especially tremendous upsurge in overall merger activity, particularly for conglomerates, was seen to occur in the period of the late 1960s. Impetus for the most recent conglomerate movement lies in the existing law and public policy. Antitrust suits before federal courts and antitrust policy of the federal government have led many to conclude that conglomerate mergers are the only feasible means for merger growth remaining. However, public policy is a dynamic consideration. Numerous allegations concerning detrimental characteristics of conglomerates and

the changing political philosophy of the national administration may bring on changes to the public policy. The major allegations against conglomerates include reciprocity, tied-in sales, elimination of potential competition, unfair economies of scale, predatory pricing, and undue political influence. Most deal with potentially harmful effects upon competition, but few have been generally given credence as a general indictment of conglomerates. Each firm must be evaluated individually.

The recent period of heightened merger activity which has affected all of American industry, has also resulted in a changed corporate structure of the U.S. shipbuilding industry. Most of the major shipyards have changed hands during this period. The corporations which have entered the shipbuilding industry are found to rank high in U.S. industry, and their shipbuilding acquisitions generally represent small portions of their overall corporate structure. Notable among these entrants are a number of conglomerate firms. It is felt that two major factors which drew conglomerates into the industry were financial difficulty of shipyards and payment policies on Naval ship construction. Other more specific motives for particular shipyards were also discussed. With the entrance of numerous conglomerate firms into the shipbuilding industry and the dominant position which they have achieved, much debate has arisen concerning the impact of

the conglomerates. Major influences of the conglomerates will be discussed in the next chapter.

CHAPTER 6

INFLUENCES OF CONGLOMERATES ON THE U.S.
SHIPBUILDING INDUSTRY

During the past fifteen years the U.S. shipbuilding industry has experienced many changes. One of the most visible of these changes has been the wave of conglomerate acquisition of many of the shipyards and their rise to dominance in the shipbuilding market. The influence that this has had on the industry is a highly controversial issue. Previously discussed was the historical development and nature of conglomeration in general and the conglomerate firms that have become involved in shipbuilding. Within this context, it is the purpose of the following section to explore the influences of the conglomerates which the author feels to be of significance to the shipbuilding industry, either actual or alleged. The areas to be investigated are facility expansion and modernization programs, organizational structure, management philosophy and expertise, Navy shipbuilding claims, power and influence, and financial reporting. An extensive examination of the Navy shipbuilding claims issue will be made because of the impact this problem has had upon the major U.S. shipbuilding market sector.

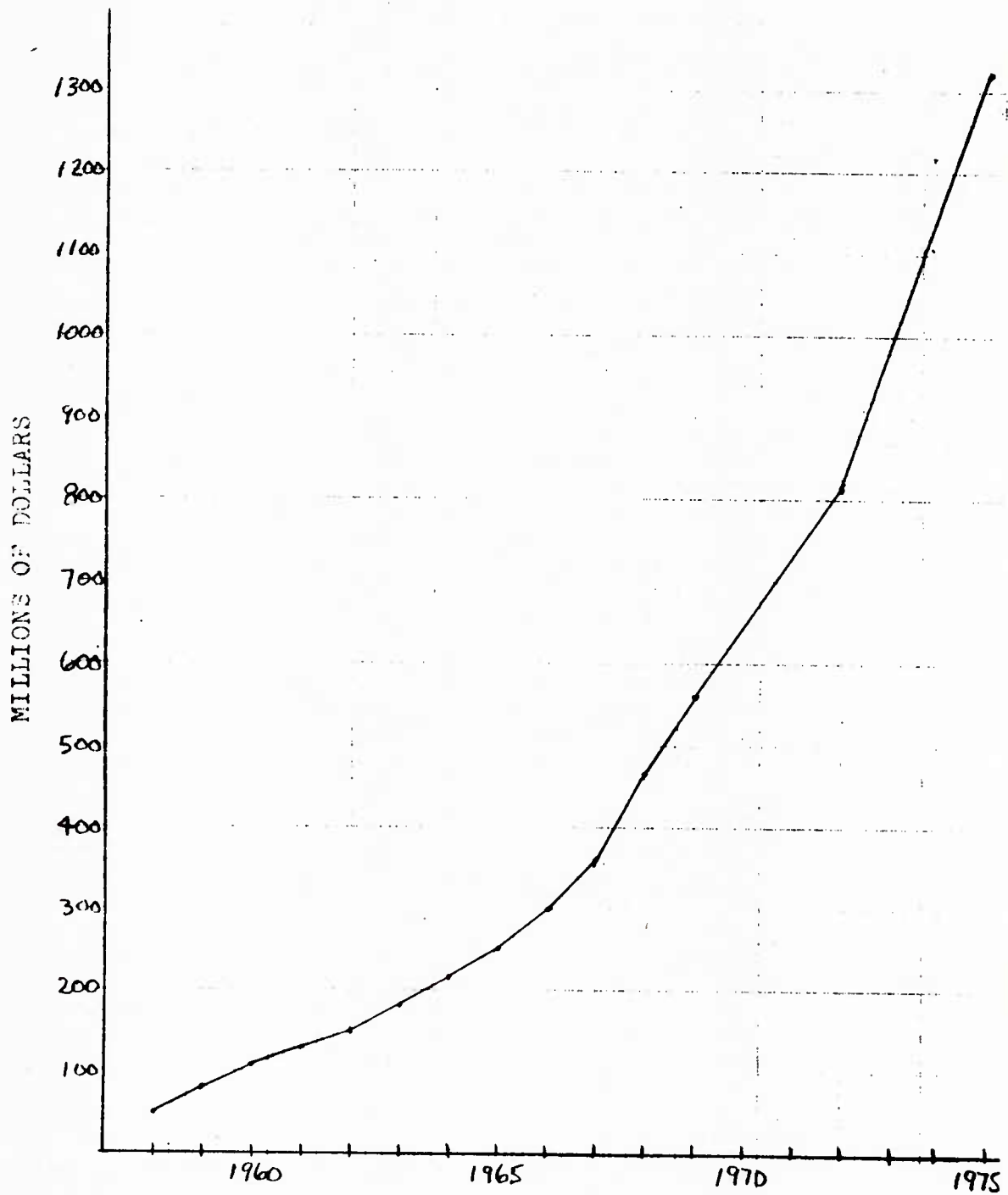
6.1 Facility Expansion and Modernization Programs

Facility expansion and modernization programs are the lifeblood of almost any company. This is especially true for the U.S. shipbuilders, whose facilities had grown increasingly obsolete after World War II until the mid-1960s. In recent years, numerous factors have confronted the shipbuilders which have even increased the requirement for facility expansion and modernization in order to enable survival and growth. These factors include the changing nature of the product to longer, wider, deeper ships requiring larger drydocks, building ways and piers; the new technology of vessels in the LNG, LPG, and supertanker; the advent of new production methods and automation which must be taken advantage of to facilitate a movement to more capital-intensive operations; the changing economic conditions and market structure; and changing employment requirements. Evidence indicates that the acquisition of shipyards by conglomerate firms has brought to the U.S. shipbuilding industry an enhanced capability to undertake the large expansion and modernization programs needed.

A. Analysis

Figure 6-1 shows the level of capital expenditures from 1958 to 1975. This shows an upsurge of expenditures for facility improvement programs since 1970 which is generally

Figure 6.1-- Capital Investment by Private Shipyards Since
1958- Cumulative



source: Bureau of Census

attributed to high expectation for the future shipbuilding market and the impetus of the Merchant Marine Act of 1970. The Commission on American Shipbuilding Report points out that the capital investment in the larger (conglomerate) shipyards has grown steadily, while that for the other yards has leveled off or declined [53, p. 83, 234-244, 54, p. 367]. Table 17 presents a tabulation of contemplated facility improvement programs (as expressed by the shipbuilders in testimony before the House Seapower Subcommittee in 1970 and 1974) [66, Vol. 2 and 67, Vol. 2] and their present status [67, Vol. 1, p. 47-55, Vol. 3, p. 1194, and 2, p. 1-23 to 1-27] for each major shipbuilder. Review of the progress made on the contemplated improvement programs shows that only one major shipbuilder was unable to achieve substantial progress--Todd Shipyard. Todd announced in 1972 that it was embarking upon a large expansion program in its Galveston and San Pedro yards which would add the capability to build the large tanker and LNG ships [62, 1972]. In their 1974 Annual Report Todd announced that due to financial difficulties experienced in recent years and in view of the large capital investment required, the expansion program at Galveston was being delayed indefinitely. Essentially no facility expansion has been completed at Galveston to date. A similar fate befell the San Pedro facility improvement plan.

Table 17--Facilities Improvement Programs Contemplated and
Their Present Status for Each Major U.S.
Shipbuilder

Avondale Shipyards (Ogden Corp.)

Contemplated: Plans for large drydock and methods for construction of LNG ships.

Status: Avondale is spending an estimated \$42 million in capital improvements primarily for LNG construction facilities. The three- to five-position shipway, used for the destroyer escort program, has been reconstructed to two large positions to accommodate the LNG program. Additional buildings and equipment to supplement the yard's mechanized handling and fabrication systems are also part of the current expansion program.

Bath Iron Works (Congoleum Inc.)

Contemplated: General facilities improvement program, steel storage, crane ways and building ways.

Status: The \$14 million modernization program has been completed. The upgrading of facilities included the reconstruction of two shipways to accommodate ships of 700 feet in length and 130 foot beam, the installation of a 200-ton level luffing crane with sufficient outreach to erect units on all shipways, and new steel fabrication and assembly shops and equipment that will double the shipyard's steel throughput capacity.

Table 17--continued

Bethlehem Steel Co. Sparrows Point Shipyard

Contemplated: General facilities expansion and upgrading for the construction of VLCC ships.

Status: To provide the capability for the construction of VLCC vessels, Sparrows Point has completed a significant facilities improvement program totalling approximately \$30 million. The major components of this modernization program are a new large building basin for the construction of vessels up to 300,000 deadweight tons and a new panel shop for fabrication of steel. Other recent improvements include a numerically-controlled gas-cutting machine and automated plate and shape blasting/painting equipment. Since the basin is expected to be used solely for new construction, the yard does not have a drydocking facility; therefore repair capacity is limited to topside and inboard work.

General Dynamics--Electric Boat Division

Contemplated: New level land erection facility and launching complex for SSN 688 and Trident nuclear submarine construction.

Status: An approximately \$150 million facilities improvement program is in process at the Electric Boat Division. The Groton site improvements are principally in the Land Level Construction Facility (LLCF) consisting of an inshore erection area; an outboard erection site; and a graving dock and pontoon facility. Completion of the LLCF is scheduled

Table 17--continued

for late 1976. Other improvements at Groton are the nuclear trade support building, the graving dock trade support building and the major components assembly building, of which most are scheduled for full occupancy in early 1976. At the Quonset Point facility, improvements are underway in buildings to be used for steel processing and fabrication, housing various shops and material storage areas.

General Dynamics--Quincy Shipyard

Contemplated: Construction of two new building basins and other facilities for construction of LNG vessels.

Status: To provide the tools and facilities to efficiently build LNG tankers in series production, General Dynamics has completed a major improvement and modernization program totalling \$40 million, of which approximately \$23 million has been expended since mid-1974. In addition to the conversion of two conventional sliding ways to large building basins, other improvements at Quincy include: a steel fabrication facility, materials handling equipment, a 250-ton transporter, a plate cleaning and blasting facility, automated steel flame planer, stripper and cutter equipment and a 1200-ton Goliath crane, the largest in the western hemisphere, installed for transferring the spherical LNG tanks from barges on which they will be delivered to the LNG ships under construction.

Table 17--continued

FMC Shipyard (FMC Corporation)

Contemplated: Facilities modernization for modular construction.

Status: To expand its shipbuilding capability to include construction of oceangoing ships, FMC has expended \$5.7 million for the acquisition of 23 acres of land adjacent to its existing facility, the purchase of a 200-ton whirley crane, new welding equipment, a thousand-ton press, and a computer-operated steel plate cutting machine.

Ingalls Shipbuilding (Litton Industries)

Contemplated: Completion of the new automated west bank yard and a new nuclear overhaul facility and modernization of the piers at the east bank yard.

Status: The new 611 acre advanced automated west bank shipyard was completed for approximately \$130 million. This complex includes the first combat systems land-based test and integration facility provided by a private shipbuilder. The east bank nuclear support and pier facilities have been modernized and expanded and improved materials handling equipment has been installed.

Lockheed Shipbuilding & Construction (Lockheed Aircraft)

Contemplated: Planned shipway upgrading and added crane capacity.

Table 17--continued

Status: Shipway #21 expansion and additional crane facilities have been completed.

National Steel & Shipbuilding (Kaiser Industries)

Contemplated: General expansion of present shipbuilding facilities for the construction of 150,000 deadweight ton tankers and 125,000 cubic meter LNG ships.

Status: During 1975 NASSCO expended \$13 million on its current expansion and modernization program. Capital expenditures of \$8.6 million are planned for 1976. In the new graving dock, NASSCO can produce ships up to 1000 feet by 170 feet, compared to a previous maximum size of 900 feet by 106 feet. A new outfitting pier and additional mechanized steel handling and fabricating facilities are also included in the current program.

Newport News Shipbuilding & Drydock Co. (Tenneco)

Contemplated: Planned new commercial shipyard of approximately 150 acres with new graving dock and accessory platen and crane facilities.

Status: Approximately \$180 million has been committed for the development of a new commercial shipyard scheduled for completion in 1976. A new building basin 1600 feet long, 250 feet wide and 44 feet deep is near completion. In this basin one ULCC or large LNG carrier and part of a

Table 17--continued

second can be built simultaneously. Supporting platens, a steel assembly shop, a 900-ton Goliath gantry crane, and two outfitting berths have also been constructed.

Additional support facilities for this new yard include more computers and storage areas.

Seatrain Shipbuilding Corp. (Seatrain Lines, Inc.)

Contemplated: General facilities improvement and modernization of large portions of the former New York Naval Shipyard for construction of 225,000 deadweight ton tankers.

Status: In 1969, Seatrain leased facilities of the former New York Naval Shipyard to build 225,000 dwt tankers on an assembly-line basis. Although the facilities that existed in 1969 included three large fabricating buildings and two massive graving docks to accommodate a maximum ship size of 1094 feet by 143.5 feet, Seatrain has expended \$40 million on reactivation. The emphasis in this program has been mechanization and automation which is widely used throughout the yard in its steel processing, module operations, and a prototype adjustable work platform.

Sun Shipbuilding & Drydock Co. (Sun Oil Co.)

Contemplated: Construction of a new facility for construction of LNG tankers or ships up to 400,000 dwt and general facility improvements in its support.

Table 17--continued

Status: When completed in 1976, the current \$42 million capital improvement program will provide Sun with a new level "shipbuilding platform," a two-section floating drydock capable of lifting 70,000 tons, a 1100 foot outfitting pier, a new plate burning facility and other shipbuilding support facilities. Portions of the new building basin have been delayed.

Todd Shipyards

Contemplated: Construction of a new shipyard adjacent to the existing Galveston facility for construction of 380,000 dwt vessels, land level construction site and large floating drydock with new launching facilities. Expansion of shipways, new cranes, and modernization of the San Pedro facilities.

Status: Todd, as a result of financial difficulties, has halted all expansion plans at the Galveston site. All that has been completed is the purchase of the adjoining land. No construction facilities exist at the Galveston site. Also, as a result of cancellations for eight 89,700 dwt tankers, has scaled down its facilities expansion program at their San Pedro yard. The rebuilding and enlarging of its two shipbuilding ways has been halted; but the company is completing the other aspects of the program, including a semi-automated panel line, improvement of

Table 17--continued

heavy lift capabilities, outfitting and related production improvements. These improvements will be needed for the recently awarded Navy patrol frigate shipbuilding contract.

The following points are significant in examining this performance:

1. All of the major merchant shipbuilders had developed strategies and announced programs for facility improvement and expansion directed primarily toward the opening market for large tanker and LNG ships. These were based upon bright expectations for the shipbuilding market.

2. Subsequent to announcement of these programs, for reasons discussed earlier, the merchant shipbuilding market suffered a severe downturn, and the future is still uncertain.

3. Due to the downturn and severe inflation in production costs, many shipbuilding contracts were reduced or cancelled. Review of the corporate annual reports indicates that during this time almost all of the major shipbuilders suffered losses on existing contracts. Todd reported losses in profits and working capital for three of the past five years [62].

4. The major Naval shipbuilders, primarily Newport News and Litton, also were incurring severe losses in their Naval contracts and carrying substantial claims against the government during this period.

Nonetheless, Todd was the only major shipbuilder that was unable to achieve substantial progress on its announced facilities improvement program. The larger, diversified shipbuilding companies were able to support their programs

in the face of adverse economic conditions. This suggests an influence of the conglomerates in maintaining strong facility improvement programs. This is further confirmed by review of some cases cited in business literature.

---Bath Iron Works (conglomerate) needed capital for facilities expansion to give its shipyard the capability to construct merchant vessels. Merger with Congoleum and other home furnishings companies generated the needed capital [7 and 36].

---General Dynamics (defense contractor) experienced near financial chaos in the late 1960s due to major losses in its data products, missile, civilian aircraft, and surface shipbuilding activities. The company was forced to shrink its business to a profitable core--its financial survival owed to other defense-related products which showed a profit [22].

---Tenneco (conglomerate) needed a large amount of funds for expansion and modernization throughout the company, including \$100-\$200 million for improvements to their Newport News Shipbuilding facilities to build LNG tankers. Through manipulations of their vast and diverse conglomerate assets, the funds were raised without issuance of additional stock [1].

---Litton (conglomerate) had acquired the Ingalls Shipbuilding facility in 1961. When the Navy changed its procurement methods to the "company-design total package procurement

basis" Litton sensed a rare opportunity to employ its large diversified base and technology expertise. Financing for the project was novel in that the State of Mississippi issued \$130 million worth of tax-exempt revenue bonds to build the yard and then leased it to Litton. The State issue of the bonds was made possible largely through the stability, diversity, and opportunity of Litton Industries, which is financial guarantor of the bonds. Litton constructed the most modern shipyard in the U.S. with highly automated equipment for the revolutionary modularized production-line approach to shipbuilding. The savings anticipated from the new production techniques were a major factor in Litton's being awarded all of the total-package procurement contracts [38].

It appears, therefore, that the diversified nature of the conglomerate affords some advantages over large, single-industry firms in supporting facilities programs.

B. Discussion

The ability of the conglomerate-controlled shipbuilders to maintain active facility improvement and expansion programs can be directly attributed to the larger capital base upon which they have to draw. From Table 18 it is easy to see the orders-of-magnitude difference in financial base between Todd, for instance, and the large corporations. The implications to the shipbuilding industry of the much

Table 18-- Financial Size of the Major U.S. Shipbuilders'
Parent Corporations

<u>Shipbuilder (Parent Corp.)</u>	<u>Assets*</u>	<u>Sales*</u>	<u>Sources of Working Capital</u>
Todd Shipyards (Todd Shipyards Inc.)	\$ 121	\$ 217	\$ 18
Bath Iron Works (Congoleum Corp.)	236	377	28
Seatrain Shipbuilding (Seatrain Lines)	395	439	197
Avondale Shipyard (Ogden Corp.)	926	1,250	266
National Steel and Shipbuilding (Kaiser Industries)	1,293	1,031	118
Lockheed Shipbuilding and Construction (Lockheed Aircraft)	1,634	3,279	152
FMC Shipyard (FMC Corporation)	1,844	2,310	318
Ingalls Shipbuilding (Litton Industries)	2,186	3,432	188
Sun Shipbuilding (Sun Oil Co.)	4,383	4,430	826
Bethlehem Steel- Sparrows Point Yard (Bethlehem Steel Co.)	4,513	5,381	682
Newport News Shipbuilding and Drydock Co. (Tenneco Corp.)	6,584	5,738	1,438

* figures indicate millions of dollars in 1975

data source: corporate annual reports

larger financial base, however, do not derive solely from the conglomerate-type of business structure; for many of the same influences are found for firms such as General Dynamics or Sun Oil which cannot be classed as conglomerates. In other words, the influence of conglomeration on the shipbuilding industry, with regard to capital improvement, stem from its characteristics of "bigness" as well as diversification.

Some influential factors felt to derive from "bigness" (as compared to smaller, single-product companies) are:

1. the ability to embark upon larger capital expansion programs;
2. less lead time for availability of funds;
3. better credit;
4. cheaper funds;
5. less risk because of larger base; and
6. subsidization from other corporate products.

It is felt that in addition to these, the conglomerates have brought to the shipbuilding industry other important features. Some of these are:

1. subsidization of working capital and funds for facilities improvement from other industries in which the conglomerate is active;
2. less reliance upon a single customer of industry--such as the government;

3. less risk in expansion programs due to larger and broader capital base;
4. better capital rationing and planning; and
5. greater access to capital markets.

These derive primarily from the diversified nature of the conglomerate. For instance, during a period such as the last few years, when production of weapons systems and aircraft have fallen off, defense contractors such as Lockheed or General Dynamics are less flexible than a multi-industry conglomerate such as Tenneco. Another example is Bath Iron Works (Congoleum Corp.) which is of comparable financial size as Todd, yet its diversification has enabled it to proceed with expansion in the face of the same economic factors as Todd.

C. Summary

It can be said that the presence of large corporations in the U.S. shipbuilding industry affords a greater capability for the industry to keep pace with its changing market and technology. It is further suggested that conglomeration has brought more flexibility in this investment capability and enhanced the survivability of some shipyards which had previously had only marginal future prospects (for example, the acquisition of Ingalls Shipyard by Litton and the subsequent addition of a nuclear capability and an entirely new, modern shipyard). The

conglomerate-controlled shipyards have demonstrated a flexibility in market strategy through their ability to expand and modernize facilities to gain large market shares in both Naval and merchant shipbuilding, rather than in just one or the other. In this regard, it is interesting to note that all of the conglomerate-controlled shipyards, with the exception of FMC, were acquired while engaged in large Navy shipbuilding programs. Subsequent facility improvement programs have been directed toward construction of merchant shipbuilding facilities. The large, highly diversified shipbuilders have also demonstrated the tendency to take the risk of large capital expenditure programs for facility improvements, whereas a one-product or one-industry company might be unwilling to go ahead with that size capital investment which would be large for it proportionately.

6.2 Organizational Structure

A characteristic change which has occurred to the conglomerate-acquired shipyards has been in their transformation from independent business entities to a segment of a division in the widely-diversified conglomerate structure. This has had several manifestations in the shipbuilding industry. First, at least one other level is added in major management decisionmaking. Many major business decisions may not be made at the local shipyard

management level, but referred to absentee top corporate management, whether it be a division vice-president or financial vice-president, or the like. This can be beneficial from the view of the conglomerate management because they have a broader overall view of the corporate situation and may best appraise the shipyard decisions within the overall corporate plans and policy. This can be viewed as a constraint by the shipyard or the customer because of increased time for the decisions and the additional encumbering executive level for customers to deal with, especially in matters of dollar-schedule performance. This last concern has been expressed by numerous DOD and Navy officials in reference to Naval shipbuilding contracts. In effect the added management organization above the shipyard management may take the shipbuilding out of the hands of the shipbuilder.

Secondly, the corporate top management may well be less aware of, or less sensitive to, local circumstances of both an intra-shipyard and community nature.

Thirdly, the addition of the conglomerate hierarchy above the shipyard management organization has seemed to induce a higher level of active relationship in Naval shipbuilding. For instance, relationships which had previously been between the shipbuilder and the Navy's Supervisor of the Shipbuilding or Ship Acquisition Project Manager have tended to rise to higher levels in the

conglomerate management and the Department of the Navy or Department of Defense. It is suggested that this elevation of working relationships tends to cause a breakdown in lower-level decisionmaking. It might be said that some conglomerates have tried to work at the level in government at which they are most likely to get their way.

6.3 Management Philosophy and Expertise

Another characteristic change which has taken place in the conglomerate-acquired shipyards has been in the basic nature of their management and management philosophy. Generally, with their acquisition by conglomerate firms, the shipbuilders have become more sophisticated in their management techniques and in their relations with customers. To the point of view of the customer, either government or civilian, they are now dealing with more than just a shipbuilding-expert firm. They are dealing with an organization operated and controlled by management-oriented managers (instead of shipbuilding technical managers) with more sensitivity to, and emphasis on, financial performance. The following factors are felt to be significant to this change.

1. Some of the private shipyards are now run by legal, financial, and contract experts instead of technical managers. The new managers are skilled and experienced in public relations, financial manipulations and government

dealings, and may not be interested in ships per se but only in making a profit. Bath Iron Works and Newport News are two instances in which conglomeration brought a new chief executive with no previous shipbuilding experience. Before he took over Bath in 1967, William Kyle had been an entrepreneur. He was forever starting companies, building them up, and selling them at a profit. After he bought into Bath, he felt that the management was living in a dream world, not making a good profit. After a loss year in 1966, he seized control and began conglomeration of his own [7]. Shortly after Tenneco acquired Newport News Shipbuilding, L. C. "Bud" Ackerman was installed as a director and president of the shipyard. Ackerman literally did not know the bow from the stern of a ship; his past experience had been in oil, distilling, and auto equipment [43].

2. Conglomerates have brought to their acquired shipyards more sophisticated managers and management techniques. To generalize the comments of Newport News's Ackerman, the shipyards had considerable technical skills, but the thrust of their managers was the management of those skills instead of the management of management and business [43]. Consequently, in addition to the personal management expertise of the new executive, the tools of the sophisticated corporate management were brought to the shipyard. Continuing with Newport News as the example, Ackerman and Tenneco brought in management information

systems and controls, greater utilization of computers to run the complex business and long-range planning systems, among other techniques. Executives from Avondale (Ogden), Ingalls (Litton), Bath (Congoleum), NASSCO (Kaiser), and FMC Shipyards report similar changes in their cases [66, Vol. 2]. This is not to say that, in the cases where top management has been replaced, the new management is "better" or "worse"; just that it is "different".

3. Shipbuilding has been recognized in the past as being a parochial business with firmly entrenched traditions and resistance to change. Some feel that conglomerates have removed this characteristic by using new methods and ideas and a broadened management perspective [43].

4. There has been a significant change in the emphasis of the conglomerate-acquired shipyards' business philosophy from shipbuilding technical expertise and quality to financial status and profitability. This results to a large degree from the overall conglomerate corporate policies, which are highly motivated by strictly financial considerations, and the nature and experience of newly installed shipyard chief executives. Whether or not the shipyard top management is actually replaced, there is still a more financially-oriented assessment of shipyard management performance by their corporate superiors. As a result, the shipbuilders have been more aggressive in seeking improved rates of profit.

The end result of these types of change to the management philosophy of the conglomerate-controlled shipyards has had an impact upon the nature of the shipyards' relationship with its customers. It appears that this impact has been much less disruptive in the commercial market than in the naval shipbuilding market, especially in view of the controversies which have arisen. Some Navy officials have expressed the feeling that the conglomerate shipyard management lacks attention to shipbuilding technical detail, quality, and timeliness, and is interested in shipbuilding solely for the impact upon the corporate balance sheet. Much of this may be true in view of the explicit policy changes in Newport News as well as other conglomerate-acquired shipyards. The shipbuilders assert that they cannot realize reasonable profits from Navy shipbuilding as they can in the commercial market; consequently some (such as Avondale) have withdrawn from the Naval market in favor of merchant shipbuilding. Concerning the commercial customers, it is especially interesting to note that the capital investment programs of the conglomerate-controlled shipyards have been very heavily directed towards expansion of facilities for production of commercial vessels, rather than Naval.

6.4 Navy Shipbuilding Claims

Contractor claims for price increases on Navy shipbuilding contracts are not a new phenomenon. Yet, since 1967 the claims problem has escalated from relative obscurity to one of major national proportion. It has been alleged by some that the genesis of the recent claims problem began some years ago when the large conglomerate corporations began to acquire control of the major shipbuilding companies in the U.S. This writer's analysis of the situation yields no justification for such a strong statement of causality. Of particular interest to this study is the fact that the recent claims escalation and the rise to dominance in the U.S. shipbuilding industry of the conglomerates have occurred over roughly the same time period.

A. Background

In the past decade, every major shipbuilder involved in the Navy's shipbuilding programs has submitted claims. Most of the claims arose under fixed-priced contracts awarded in the 1960s under the Total Package Procurement policy. This policy employed formally-advertised fixed-priced contracts for all phases of ship procurement, including research and development. Prior to that time, the Navy allocated its new ship construction to private shipyards based upon available facilities, and used

negotiated fixed-priced contracts which made allowance for the particular facilities and circumstances of the shipbuilder involved. Additionally, in the past, the fixed-price contracts were used only for procurement of ships with relatively firm specifications and ordinarily awarded cost- or incentive-type contracts for cases involving significant unknowns. The cost- or incentive-type contracts were flexible enough to absorb increased costs due to unanticipated developmental problems or changes without resorting to claims. Standard disputes clauses of these earlier contracts also provided a fairly efficient means for equitable resolution of emergent claims.

The transition of contracting procedures is but one aspect of the general causes of the claim problem and should be put in proper historical perspective [51, Appendix D]. By 1960 the Navy's destroyer and auxiliary forces were becoming overaged and obsolete, especially in relation to the rapidly expanding Soviet fleet. Consequently, a large-scale building program was undertaken. The surge of Navy shipbuilding work literally flooded a U.S. shipbuilding industry that was in most respects ill-prepared for the large production demands. Shipyards which had experienced a normal backlog of three to five Navy ships now faced backlogs of twenty or more by the late 1960s (Avondale and Lockheed, for example). This strain put upon the industry to provide efficient production, sufficient facilities, and

trained personnel was further compounded by the "technology jump" of the ships' sophisticated weapons and electronics systems.

At the period of the late 1950s and early 1960s when the large Navy shipbuilding program was established, the American economy was in a recession. The excess capacity and pool of skilled workers could be effectively used for the very initial program phases. During this turn-around period, prices remained relatively stable and manpower available. Many ships were completed with only minor claims activity (pre-1965). Also during the period of fairly stable prices came the major Department of Defense weapons systems acquisitions policy changes of Secretary McNamara. The previous policies of allocations to shipyards and negotiated fixed-price contracts, which assured most major shipyards of some business, were replaced by the formally-advertised fixed-price contracting of the CF/CD policy which has been described earlier. The buyer's market induced intense competition and "pencil-sharpening" to be the lowest bidder and win award of contracts for a large number of vessels. The bidding proceeded at a time of relative price stability and available manpower. Further, it was thought that new production methods (such as the automated shipyard of Litton) would increase productivity. What resulted was exceedingly low bid awards, especially on the DE-1052 contracts, and a

tremendous commitment to further contracts, especially by Litton.

By the time a major commitment had been made by the shipbuilding industry in either actual production or towards other contracts, the economic slack was gone. The increased demand and other effects of the escalating Vietnam war brought on inflation along with stiff competition for skilled manpower. As the war peaked in the late 1960s, the inefficiencies inherent in training a large inexperienced workforce, difficulties encountered in expanding production facilities to meet the increasing demand and spiralling inflation all wreaked havoc upon the Naval shipbuilders. Many of the shipbuilders had incurred significant losses due, they felt, to factors beyond their control. Nevertheless, the additional cost effects of war, manpower shortages, inflation and "buy-in" are not compensable under government contract law. Thus is the emergence of the enormous amount of "delay and disruption" and "constructive change" claims.

B. Status of shipbuilding claims

Tables 19 through 22 review the development and current status of shipbuilding claims [20, 21 and 2, p. 3-8]. These show how significant the escalation in claims has been and that the conglomerates account for most of the major

shipbuilding claims submitted, especially for Newport News (Tenneco) and Litton.

Table 19--Shipbuilding Claims Submitted, 1967-1976

Year	Claims Received		Net Claims ^a Adjustment	Total
	Number	Amount		
1967	4	\$ 39.1 Mil	--	\$ 39.1 Mil
1968	17	121.0	\$ 55.0 Mil	176.0
1969	25	336.9	71.3	408.2
1970	16	116.6	40.7	157.3
1971	31	405.1	8.6	413.7
1972	5	280.0	2.7	282.7
1973	3	179.4	(3.6)	175.8
1974	1	10.0	32.4	42.4
1975	7	707.5	214.9	922.4
1976 (to June 30)	2	311.7	197.3	509.0

^aShipbuilders often adjust the value of their claims against the Navy after initial submission.

C. Claims settlement procedure

Claims may be disposed of in four ways: (1) settlement between the parties; (2) unilateral contracting officer's decision; (3) withdrawal by the contractor; or (4) rejection of the claim by the contracting officer.

Upon submission of a claim by a contractor it is referred to a claims team composed of personnel with expertise in the technical, legal, business, accounting, and economic aspects of the contract(s). The objective of

Table 20-- Shipbuilding Claims Submitted Over \$1 Million By Shipbuilder, 1967-1976 (to 30 June)

<u>Shipbuilder</u>	<u>Number of Claims</u>	<u>Total Amount Claimed</u>
Alabama Drydock and Shipbuilding Company	1	\$ 14.2 Mil
American Shipbuilding Company	1	1.1
Avondale Shipyards, Inc.	2	169.1
Bath Iron Works Corp.	1	1.7
Bethlehem Steel Company Shipbuilding Division	3	55.7
Defoe Shipbuilding Company	5	16.2
Dillingham Shipyards	1	16.0
General Dynamics Corp. Electric Boat Division	6	269.0
General Dynamics Corp. Quincy Shipbuilding Div.	10	242.2
Ingalls Shipbuilding Division of Litton Industries	8	867.3
Lockheed Shipbuilding and Construction Company	9	205.0
National Steel and Shipbuilding Company	1	49.2
Newport News Shipbuilding and Drydock Company	16	1050.9
New York Shipbuilding Company	1	4.8
Northwest Marine and Iron Works Company	2	3.1
Tacoma Boat Building Company	3	6.3
Todd Shipyards Corporation	4	121.8
Total	74	\$ 3093.6 Mil

Table 21--Shipbuilding Claims Over \$1 Million on Hand
as of 30 June 1976

<u>Shipbuilder</u>	<u>Ship</u>	<u>Amount</u>	<u>Date Submitted</u>
Boland Marine	DLG-10	\$ 3.3 Mil	8/75
Newport News	CGN-36, 37	151.0	6/73
Shipbuilding and	CGN-38-40	159.8	8/75
Drydock	SSN-688	78.5	7/75
Company	SSN-689, 691 693, 695	191.6	7/75
"	CVN-68, 69	221.3	2/76
"	SSN-686, 687	90.4	3/76
Total		\$ 895.9 Million	

Table 22--Armed Services Board of Contract Appeals (ASBCA)
Shipbuilding Cases Over \$ 1 Million as of 1 March 1976

<u>Shipbuilder</u>	<u>Ship</u>	<u>Appeal Amount</u>
Ingalls Shipbuilding	SSN-621	
Division of	SSN-639	
Litton Industries	SSN-648, 652	\$ 107.8 Million
"	LPD-7, 8	
"	LPH-10, 12	
"	LSD-36	
"	SSN-680, 2, 3	31.2
"	LHA 1-5	504.8*
Todd Shipyards	AGOR-16	3.0
Merritt Chapman and		
Scott (Formerly New	Various	6.8
York Shipbuilding)		
Total		\$ 653.6 Million

*This appeal suspended by agreement of the parties to
attempt to reach a negotiated settlement

the claims team is to develop facts concerning the claim, to document such facts and to apply legal and business principles so as to develop a legal and logical position for a negotiated resolution or for litigation in the event that a negotiated resolution does not occur.

The claim is segregated into its various elements, e.g. each constructive change, delays, suspensions, late GFP or GFL, etc. This is known as "scoping the claim." Each team member evaluates that portion of the claim which falls within his expertise. Upon completion of these evaluations, the findings of the team members are consolidated for review. As part of the evaluation process, corollary investigations are conducted to ascertain facts which have a significant bearing on the claim but which might be excluded from the contractor's submission. Such corollary investigations would include (1) review of contract formation background to determine particularly or peculiarly known situations at the outset of contract award and at initiation of contract performance; (2) overall contract performance; (3) known problems experienced during contract performance; (4) review of contractor's accounting records to determine, to the extent practicable, actual costs relating to claim elements; and (5) review of contractor's production records to determine responsibility, to the extent feasible, for the claim element.

The claims team, as a whole, develops positions with respect to (1) minimum entitlement, assuming all areas are resolved against the contractor; (2) maximum entitlement, assuming all questionable areas are resolved against the Government; and (3) degree of questionable areas.

Negotiations are attempted within the range of the minimum and maximum entitlement levels. If negotiations result in the inability to reach a settlement within the given upper and lower levels, a contracting officer's decision is written at the minimum entitlement level. Depending upon the size of the claim, the negotiation process and final claim award occur at various organizational levels. Should the shipbuilder not accept the final Navy disposition of the claim, he may appeal to either the Armed Forces Board of Contract Appeals (AFBCA) or the U.S. Court of Claims [51, p. 49].

D. Causes of claims

From the foregoing discussion it is evident that the actual causes of shipbuilding claims present a very complex question. However, the claims submitted by a shipbuilder must be based upon specific government action or inaction causing additional costs. Specific shipbuilding claims against the government are based primarily upon the theory of "constructive change" which is roughly defined as any conduct of a contracting officer or his agent, other than formal change orders or supplemental agreements, which

has the effect of prescribing new or different work than required under the contract [63]. Studies have been made to identify the causes of claims. Below are discussed the primary causes cited [20 and 21].

1. Late and inaccurate lead-yard working plans

Often ships of the same class are constructed by more than one shipbuilder. In these circumstances, one shipbuilder, called the lead-yard, is selected to construct the first ship of the class and to provide the detailed working plans to other shipbuilders, called follow-yards. If the working plans are inaccurate, the contractor must revise the plans before proceeding with construction. Late working plans can delay and obstruct the construction effort; thus increasing contractor costs.

2. Inadequate specifications

Specifications contain detail technical requirements for ship construction and describe details concerning equipment to be installed. Defective or misleading Navy specifications have been a continuing factor in shipbuilders' claim submissions. According to shipbuilders, defective specifications resulted in additional costs because new specifications had to be prepared to replace defective ones. This took more time and cost more money than was originally estimated. Contractors allege they have had

to rip out and redo completed work found to be unacceptable because of defects in specifications.

3. Defective and late delivery of Government-furnished equipment and technical information

In its shipbuilding contracts the Navy agrees to provide the contractor with various equipment for installation on ships when this is deemed to be in the best interest of the Government. When equipment or technical information is delivered late, shipbuilders' construction schedules and delivery dates may be affected. By the same token, when equipment is defective rework is required which, in turn, interrupts the shipbuilders' schedules for fabricating and installing supporting structures and service systems for the equipment.

4. Unanticipated increases in quality assurance requirements

The Navy and its contractors disagreed over whether the contractors could have reasonably been expected to anticipate and allow for increases in quality assurance requirements. On contracts let in the 1960s, the contractors' viewpoints have been that the Navy increased its requirements to a greater extent than anticipated. Navy officials feel that quality assurance problems occurred because of Navy attempts to eliminate laxity in enforcing requirements spelled out in the contract. In any event, quality assurance claims are often filed under the category of excessive and erroneous inspections.

5. Indiscriminate use of verbal constructive change orders

Constructive change orders are changes not formally issued in writing; however, they have the effect of formal changes because they require the contractor to perform work different from, and in addition to, that prescribed by the original terms of the contract. These changes include verbal changes directed by inspectors and other Navy officials stationed at shipyards to oversee contractors' work. Shipbuilders contend that verbal constructive change orders are costly and have far-reaching effects because changes made by the economies and efficiencies involved in the construction of the entire ship. Navy officials contend that in some cases the constructive change orders are used as an excuse for recovery of unrelated losses.

6. Inability of the Navy and its contractors to promptly identify and settle contract disputes

According to Navy procurement officials, one of the major causes of claims has been the inability of either the Navy or contractors to identify potential requirements for contract price adjustments at an early stage and the lack of procedures to settle issues when they are small and knowledge of surrounding factors is current. Contractors argue that factors such as this lead to reasonable but unsupportable claims.

7. Improper acquisition techniques

Much of the blame for the claims problem has been placed upon past excessive use of fixed-price contracts which often required the contractor to accept too many unknowns, particularly under procurements involving concurrent development and production. Many feel that these contracts of the Total-Package procurement policy did not provide enough flexibility in contract price to compensate contractors for unanticipated development and production problems. In addition, contracts often did not provide for a rate of inflation which shipbuilders experienced.

8. Underpriced contracts

Seriously underpriced fixed-price contracts are another factor cited as contributing to claims. Many reasons are given for underpriced contracts, including so-called buy-ins by contractors during the 1960s when competition was keen and contractors allegedly purposely bid low in order to obtain Navy work. Unrealistically low bids are also attributed to the contractor's inadequate assessments of the technical risks involved in ship procurements.

9. Delay and disruption due to changes

A large portion of constructive change claims is attributed to the "ripple effect" or synergy in the effects of multiple changes. In some cases, many compensable acts

taken together have an effect on cost that is greater than the totality of these acts if the cost effect of each act is analyzed separately. The administration and control of changes by the government has been marked by delays in the decisionmaking process which, coupled with the policy of pre-pricing changes, causes delays in the issuance of necessary change orders. Further, changes have been excessive, especially under the CF/CD procurement policy.

10. Contractors' inefficiencies resulting in additional costs

Contrary to the previously cited causes of claims which relate to acquisition program deficiencies is the charge that some claims have been submitted to recover contractor-responsible costs. These include losses due to contractor inefficiencies and costs to subsidize previous losses and non-Navy work. Unsupported and even fraudulent claims have been charged to the point of Justice Department investigations being initiated.

E. Claims and conglomeration

From the foregoing it can be seen that conglomerates have been deeply involved in the claims issue since its escalation in 1967. Further, it has been verified that (1) the development of the current claims problem has occurred during a period in which conglomerate-controlled shipyards have increasingly dominated the U.S. shipbuilding

industry in facilities and output; and (2) conglomerate-controlled shipbuilders have accounted for an extremely large share of the claims submitted. These factors, however, are probably correlative rather than causative. In fact, considering the amount and complexity of Naval shipbuilding work performed by the conglomerate-controlled shipbuilders, one might logically expect the second statement.

Although it is indeed not the intent here to explore the question of the cause of the shipbuilding claims problem, it is fair to say that Total-Package procurement played no small role. In the mind of the author, the influence of these acquisition policies and their economic environment so dominate the claims issue that they largely obscure identification of the impact of conglomeration, in and of itself. There are, however, some factors of conglomeration in the shipbuilding industry which are felt to have been of some influence.

1. As mentioned previously, many of the conglomerates brought to their acquired shipyards a new type of management expertise and management techniques such as planning, cost analysis, and management information systems. These have enabled shipyard management to become better aware of their production costs. Additionally, and probably more importantly, the information systems have also made the senior corporate management more aware of costs and shipyard

management performance. It is suggested that the greater cost awareness of both conglomerate and shipyard management and the high financial priorities of conglomerate management have brought both pressure on, and the greater ability of, shipyard management to avail themselves of claims to recover losses.

2. It is suggested that the conglomerate-controlled shipyards are better able to survive and press claims litigation. This derives from two major factors brought to the acquired shipyard by the conglomerate. First, the conglomerate typically has available the service of a large, capable corporate legal staff. Additionally, the value of this legal staff is enhanced by specialized Washington law firms that help prepare and prosecute claims against the government. Instances have been cited where senior engineering and other technical talent were assigned to work full-time over extended periods in developing the background and justification for masses of paper to be submitted to the government as part of the contractor's formal claim procedure [67, Vol. 3, p. 1262-1356]. Secondly, the large financial base of the diversified conglomerate gives the shipbuilder the ability to financially survive the claims litigation period which has typically extended to two or more years. Without the funds source, the shipbuilder would be less able to negotiate claims to its advantage for fear of financial chaos brought on by having to "carry" a large claim for a long period.

3. Throughout the evolution of the claims problem, the conglomerates have, to a large extent, led the way in the prosecution of shipbuilding claims. During this period, claims processing techniques for the contractors, the Navy and the Department of Defense, and the legal principles in government contract law were developed. The leadership exercised by the conglomerate-controlled shipbuilders helped to create an atmosphere of ever-growing acceptance of the claim as a viable business tool. It can be said that largely through the example of the conglomerates, shipbuilding claims had become almost fashionable during the early 1970s, being used by all major shipbuilding contractors.

4. The allegations of "creative accounting" are frequently heard in relation to business organizations. They are not just directed at the large conglomerate business, but cross the broad spectrum of business organization. Such is also the case in the shipbuilding industry. In relation to shipbuilding claims against the government, testimony before the House Seapower Subcommittee in 1974 charged that shipbuilders submitted claims based on tenuous documentation in order to enhance the financial appearance of the company [67, Vol. 3, p. 1292]. Certainly, it cannot be said that such practices are indigenous to conglomerate organizations; however, the specific case has been attributed to them. In effect what happens is that

such a claim can be included as an asset in the financial statements; thus postponing a loss on a shipbuilding contract. The shipbuilder cannot continue this charade once he settles his claim, but if he is in a loss position on a contract, it is to his advantage with this kind of accounting to delay settlement of claims until a more advantageous time in the future. It is one way that profits can be reported to stockholders at the same time complaints of losses are made to the Navy. This can be an especially effective technique to show a rapid profit turnaround after acquisition of a shipyard by a conglomerate.

F. Summary

It is the general conclusion here that conglomeration in the U.S. shipbuilding industry was not a primary motivating force for the recent claims problem; although it was a contributing and possibly an aggravating influence. This influence has been manifest in an apparent greater propensity of conglomerate-controlled shipyards to exercise claims due to a greater resource base of both manpower and financing, and their high financial priorities. This is to say that it appears that the conglomerates are more ready, willing and able to prosecute claims. Also, it is felt that the apparent leadership of such firms in prosecuting claims against the government has contributed to claims activity of other shipbuilders.

6.5 Power and Influence

Over the past fifteen years, the conglomerate-acquired shipbuilders have gained control of a large segment of the U.S. shipbuilding industry. Part of their control is reflected in the number and market share of these shipyards. Review of the earlier chapter on market characteristics shows that on January 1, 1976, the conglomerate-controlled shipyards represented six of the twelve active major shipbuilders of merchant ships with 60% of the market tonnage, and four of the six active major Naval shipbuilders with 75% of the market tonnage. Three of the top four merchant shipbuilders are conglomerate-controlled. From these data it is apparent that the conglomerates have great dominance in the Naval shipbuilding market sector. This is particularly evident in the rise in conglomerate market share from 49% to 75% in the past ten years and in their control of special industry capabilities. Conglomerate-controlled shipyards represent two of the three (Newport News, Litton, and Electric Boat) U.S. shipyards capable of building nuclear submarines, as well as the only U.S. shipyard (Newport News) presently capable of building nuclear surface ships. The degree of their dominance affords the conglomerates a source of power and influence upon the U.S. shipbuilding market, especially in Naval shipbuilding.

The conglomerates have also gained power in the shipbuilding industry through the business and political spheres. Again this has been particularly true for the shipbuilders' largest customer, the U.S. government. Due to the inherent diversity and financial position, the conglomerate top management and their shipyard representatives would tend to have vast resources of influence and associations within business and government circles. Lobbying organizations such as the Shipbuilders' Council of America also reflect the views of their conglomerate members. They have developed influence within national politics through their nature as large corporations, their impact upon local economic and employment considerations and, in the past, through substantial campaign contributions.

The top officials of the Department of Defense (DOD) and the Maritime Administration are the primary national shipbuilding policymakers. Most of these positions are filled by Presidential appointment with the confirmation of Congress. The DOD is run at the top by political appointees who generally are chosen from the defense industry and who return to industry after a few years of government service. The industry representatives often have the ear of many of these DOD officials; therefore, it is not surprising that defense officials may have an industry slant in their views. Such an influence may have existed in the Total-Package Procurement contract awards in the

1960s through the association of Mr. Roy Ash and Mr. Robert McNamara. Mr. Ash was chairman of Litton Industries at the time Mr. McNamara was Secretary of Defense in the mid-1960s. Furthermore, during testimony before the Senate Subcommittee on Priorities and Economy in Government (1973), Mr. Roy Ash was sharply criticized for his role in the negotiations with the Navy of Litton's LHA shipbuilding claims. It had already been announced that Mr. Ash would be leaving Litton to assume new duties as the Director of the Office of Management and Budget [64, p. 1916].

Thus, the conglomerates have gained power and influence within the shipbuilding industry because of their number, market share and shipbuilding capabilities, especially in Naval shipbuilding. Their power and influence has in many ways been exercised with the industry's primary customer, the federal government, through business and political strength both outside as well as within the primary shipbuilding policy and regulatory agencies. It is fair to say, then, that the conglomerates potentially have the power and can exert the influence to affect many aspects important to the industry, such as MarAd subsidy policy, Navy procurement policies and decisions, claims settlements, internal DOD relations and other political and business matters. Their leverage may predominantly express their own self-interests; however, it must also increase the influence of the industry as a whole.

6.6 Financial Reporting

A characteristic change which occurs upon acquisition of a company by a conglomerate is the consolidation of its financial reports into the larger corporate reports. This has been the case with many previously independent shipyards. Todd Shipyards is now the only major shipyard which makes independent financial reports. The primary impact of this change has been upon the procurement of Naval vessels because shipyard financial statistics are no longer available and because of the low reliability of the corporate shipyard statistics reported.

Much has been said by shipbuilders to the effect that, on Navy shipbuilding at least, profits are low and going lower [67, Vol. 2]. Presumably the figures quoted by the shipbuilding executives are taken from financial reports such as annual reports. The financial information contained in these reports is not only relied upon by investors and creditors, but also plays an important role in defense procurement. Major shipbuilders cite figures from their reports in efforts to negotiate higher shipbuilding subsidies, higher shipbuilding profits on new orders, to obtain more favorable claims settlements, or to change procurement policies. In some cases, these figures are accepted without question, not recognizing how profits are calculated or how figures are manipulated or that neither

the Navy nor the Defense Contract Audit Agency have access to the financial books and records to verify the numbers.

Given the importance of the corporate financial reports to the economy as a whole, and also to Navy ship procurement, it would be expected that the figures in these reports accurately reflect the results of the company's operations and its overall financial condition. However, there is great latitude in the accounting for costs and profits. As a result, the figures are susceptible to manipulation and judgment which can dramatically change reported profits, all within the constraints of "generally accepted accounting principles." Furthermore, the consolidation of the shipbuilding financial data into the corporate reports obscures the situation even further. For instance, most major shipyard conglomerates use the pooling-of-interest method of accounting, whereby in a merger, the asset values of the acquired shipyard are "pooled" with the conglomerate assets at book value. This method provides an advantage in that the asset values subject to a write-off against income are minimized, and the future earnings performance is enhanced. Also, the case of accounting for claims has been mentioned previously. The general availability of conglomerate shipbuilding financial data has been improved somewhat by recent SEC rules requiring financial reporting by major corporate division.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

Review of the United States shipbuilding industry and influences of conglomerates presented in this study has led the author to the following conclusions:

1. The U.S. shipbuilding industry has played an important role in the history of America since pre-revolutionary times. Although its development has been affected by American and world economic conditions, the single most influential factor in shaping the industry has been the U.S. Government. The primary elements of this government influence are maritime legislation and Navy procurement policies. Maritime legislative policies and requirements are administered primarily by the Maritime Administration. The most important of the legislative policies and programs is the Construction-Differential Subsidy (CDS) program, which derives from the Merchant Marine Act of 1936 and seeks to improve parity between the United States and world ship construction costs. In 1970 the CDS program was modified to further stimulate American shipbuilding.

Three Navy ship acquisition policies are evident from the last twenty-five years. Many features of the Total Package Procurement policies of the 1962-1969 era have

developed into serious problem areas for the 1970s. The present policy seeks to learn from these lessons and move forward with an improved Navy shipbuilding program.

2. United States shipbuilding can be divided into two fairly distinct market sectors of merchant and naval shipbuilding. Merchant shipbuilding alone is not a major influence on world shipbuilding; however, considered with the extensive naval shipbuilding program, the United States must be ranked with Japan and the U.S.S.R. as the leading world shipbuilding nations. Even so, the U.S. shipbuilding market has been effectively isolated from the rest of the world by the U.S./foreign construction cost differential and the requirements of federal legislation. The merchant shipbuilding sector represents approximately one-half of the number and 90% of the tonnage, but only one-third of the value of present construction; is dominated by four major producers; and is directed primarily towards tanker construction. The naval shipbuilding sector, which represents about two-thirds of the value of ship construction, is supplied by only six of the fourteen major shipyards, but is clearly dominated by three major builders. Taken as a whole, U.S. shipbuilding can be viewed as oligopolistic in terms of the major producers of merchant and Naval vessels and monopsonistic in terms of the major customer in the market, the U.S. Government.

3. Through five major periods of merger activity since 1879, conglomeration has become an important means of diversified business growth since the late 1960s. The recent period of heightened merger activity has greatly changed the corporate structure of the shipbuilding industry since 1959. Most notable in this has been the entrance of conglomerate firms into the industry. It is felt that two major factors which drew the conglomerates into the industry were financial difficulty of shipyards and the payment policies of the Navy shipbuilding at the time. (Other more specific reasons are explored in the study.) Presently, of the twelve major shipbuilding corporations, six can be classified as conglomerates and only one (Todd Shipyards) as an independent shipbuilder. For most of the shipbuilding parent corporations, shipbuilding constitutes only a small share of the total business activity. Also, from their dominating market share position, it is evident that the conglomerate firms are in a position to greatly influence the total shipbuilding industry.

4. Six major areas of conglomerate influence on the U.S. shipbuilding industry were identified: facility expansion and modernization programs, organizational structure, management philosophy and expertise, Navy shipbuilding claims, power and influence, and financial reporting.

(a) The presence of large corporations in the shipbuilding industry has afforded a greater capability for the industry

to keep pace with its changing market and technology. However, it is suggested that conglomeration has brought greater flexibility into facility investment programs through not only a large financial base, as other large corporations, but also through their widely diversified nature. The evidence indicates that the conglomerate-controlled shipyards have been better able to undertake large facility expansion and modernization programs, and to maintain such programs in the face of adverse economic conditions. Additionally, they have exercised a flexibility in market strategy through facilities expansion to gain large shares in both merchant and naval shipbuilding, rather than in just one market sector.

(b) The acquired shipyards have undergone the characteristic change in its organizational structure from that of an independent business entity to that of division of a corporation. This is true for both corporate and conglomerate acquisitions; however, it is felt to be more significant for the conglomerate acquisitions because, generally, the acquired firm becomes a lower-level segment. This can have several manifestations. Additional levels are placed in the decisionmaking process which can tend to encumber and delay shipyard executive decisionmaking and may, in effect, take the shipbuilding out of the hands of the shipbuilder. Absentee corporate top management may be less aware of, and sensitive to, local circumstances

of both an intra-shipyard and a community nature. Also, addition of conglomerate hierarchy has seemed to induce a higher level of management relationship in Naval shipbuilding (more so than for the corporations) in that relationships which had generally been between the shipbuilder and the Navy Supervisor of Shipbuilding have tended to rise to higher levels in both the conglomerate management and the Navy and Department of Defense.

(c) Other characteristic changes have occurred in the management philosophy and expertise of conglomerate-acquired shipyards. In some cases, shipyard technical management has been replaced by management-oriented managers from the conglomerate parent. Some have brought new and sophisticated management techniques. There has been some impact upon the prevalent shipbuilding parochialism. Also, management philosophies have shifted to a greater financial status and profit orientation. The changes in the overall shipyard management attitudes, philosophies and orientations have impacted upon the shipyards' relationships with their customers. It appears that this impact has been much less disruptive in the commercial market than in the Naval shipbuilding market.

(d) The conglomerates have been involved in the issue of Navy shipbuilding claims since its escalation in 1967, primarily due to the development of the claims problem during a period in which conglomerate-controlled shipyards

have become increasingly dominant in the shipbuilding industry, and that the conglomerate-controlled shipbuilders have accounted for an extremely large share of the claims submitted. Based upon available data, the author concludes that this relationship is not one of cause-and-effect, and that conglomeration in the U.S. shipbuilding industry was not a primary motivating force for the recent claims problem. A contributing and possibly aggravating influence is felt to exist, however, in an apparently greater propensity of the conglomerate-controlled shipyards to exercise claims due to a greater resource base of both manpower and financing, and their high financial priorities. This is to say that it appears that the conglomerates are more ready, willing, and able to prosecute claims. Also, it is felt that the apparent leadership of such firms in prosecuting claims against the government has contributed to claims activity of other shipbuilders.

(e) The conglomerates have gained power and influence within the shipbuilding industry because of their number, market shares and shipbuilding capabilities. They have potentially the power to affect many aspects important to the industry, such as Maritime Administration subsidy policy, Navy procurement policies and decisions, claims settlements, internal Department of Defense relations, and other political and business matters. Their leverage may predominantly reflect their own self-interests, but it also

may increase the influence of the industry as a whole.

(F) Financial reporting of the shipyards have been absorbed into the reports for the acquiring corporations. This has significantly reduced the financial data available for examination and cannot be restricted to just conglomerates.

By intent, this study has been limited in scope to shipyards capable of new construction of Naval ships, such as destroyers and larger, and oceangoing merchant vessels longer than 475 feet, and based upon data and resource material which is generally available, rather than confidential or proprietary information. Further investigation of the influences of conglomerates on the shipbuilding industry are recommended in the following areas:

1. Detailed financial analysis of the performance of conglomerates in the shipbuilding industry. Such studies have been performed for other industries, and this will require access to confidential corporate financial data.

2. Examination on site of the impact of conglomerates on organizational structure and internal operations of the acquired shipyards. This can be compared with that for the corporate-controlled and independent shipyards.

3. Examination of the shipbuilding market strategies of the large corporations, conglomerates and the independent, to determine the extent to which the industry strategy is determined by the conglomerates, or vice versa.

4. Examination of the shipbuilding technology employed by the conglomerate-controlled shipyards to determine the extent, if any, to which they have achieved advantages or enhanced overall industry technology levels.

5. Investigation of the extent to which conglomerates have been able to achieve economies of scale in the industry.

6. Review of the Navy managerial, political, and legal policies to determine shipbuilding policy changes appropriate to nurturing an improved environment for the Navy shipbuilding programs.

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